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ABSTRACT

This report describes Phase II of a project which developed a system for delivering fire safety training to board and care providers who serve adults with developmental disabilities. Phase II focused on developing and pilot testing a "train the trainers" workshop for instructors and field testing the provider's workshop. Evaluation of the 2-day instructor's workshop showed significantly improved scores from pre-test to post-test and positive participant evaluations. Twelve of the 16 eligible participants subsequently conducted workshops for board and care providers. The field test of the 1-day workshops for providers, with 263 participants, also found significant knowledge gains and positive attitudes. Recommendations focused on revisions to the provider workshop so that it can more easily be given in 1 day. This report describes the overall study design and procedures; the design of the instructor's workshop pilot test and its results; the design of and results from the field test of the provider's workshop; results of an additional workshop and a follow-up survey; summaries of the findings, problems, and recommendations for changes to both workshops and workshop materials; and implications for the project's final phase (Phase III). (DB)

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A Fire Safety Certification System for Board and Care Operators and Staff

SBIR Phase II: Final Report

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*To be added to Final Draft.

PREFACE

Under contract to the Office of Human Development Services, Administration on Developmental Disabilities (ADD), Bonnie Walker and Associates (BWA) has conducted a study to develop a fire safety certification system which can deliver uniform, validated training to board and care operators who work with adults with developmental disabilities. This study expands on previous work performed by BWA documented in "A Fire Safety Certification System for Board and Care Operators, Phase I, Final Report, December 20, 1988."

Meeting the objectives of the study required the development of a workshop to train instructors to conduct the fire safety workshop for board and care providers developed during Phase I and conducting a large scale field test of the provider's workshop using these newly trained instructors. Data were collected through a number of measures: pre- and post tests, course evaluation forms, follow-up surveys with instructors who had completed training, videotape recordings of the Instructor's Workshop and of a Focus Group meeting during which Advisory Council members discussed their observations of the Instructor's Workshop and the fieldtest of the Provider's Workshops.

Bonnie L. Walker was the principal investigator. Susan Shemanski performed a major portion of the data analysis. Other staff contributors were Margaret S. Withrow, April L. Walker, and Alexis Smith. Advisory Council members who contributed by conducting portions of the Instructor's Workshop, conducting workshops for providers, or observing provider workshops, or assisting in the data collection and reporting were: Terezie Bohrer, Harry S. Bradley, John Bryan, Harold D. Hicks, Jr., Marjory Owens, Betty Jo Mayeske, Michael Strait.

We wish to recognize the role played by Marjory Owens, Housing Specialist for Project Home, and the Project Home case workers who participated in the Instructor's Workshop and conducted the eight workshops during the field test. Ms. Owens organized all of the field test workshops, recruited providers to participate in them, conducted a major part of the fire safety instruction, and provided technical assistance throughout the development of the Instructor's and Provider's Workshops.

We also wish to recognize the role played by the study's technical monitor, Vernard Evans of the Administration on Developmental Disabilities. She followed our work closely and could be counted on throughout to provide meaningful suggestions and assistance when they were needed.

INTRODUCTION AND EXECUTIVE SUMMARY

Under contract to the Administration on Developmental Disabilities, Bonnie Walker & Associates has completed the pilot test of the Instructor's Workshop and the field test of the Provider's Workshop, two components of the Fire Safety Certification System for Board and Care Operators. This study was intended to produce a uniform, validated system for delivering fire safety training to board and care providers nationally who serve adults with developmental disabilities.

Phase I Results

Phase I took place between June and December 1988. During that period, BWA developed the curriculum and materials for a fire safety workshop for board and care operators. Materials included a trainer's manual, participant's coursebook, two videotapes, an audiocassette, eleven job aids, a pre- and post test, and other evaluation instruments.

On November 14, 1988, the materials were pilot tested at Melwood Training Center, a non-profit organization that operates residential care facilities for adults with developmental disabilities in Maryland. Participants were direct care and supervisory staff members of that organization. Results of the evaluation indicated a statistically significant mean gain from pre- to post test for the participants (N=12). Participants improved as a group on a large majority of the test items (N=21). Results of the course evaluation which measured the participants' feelings about the training indicated that participants had a very positive view of their own learning. Participants were surveyed to determine their interest in continuing education materials. A large majority indicated an interest in learning more about fire safety. Additional data were collected by an independent observer who recorded training events at five minute intervals, an audiocassette recording of the training, and by a second observer who made unstructured comments about problems and successes throughout the training and noted suggested changes to the Trainer's Manual and Coursebook.

Information that would be useful in revising the materials was sought from the pre- and post test results, the course evaluation results, from observations during the training, and from a review of the pilot test materials by members of the Focus Group. The findings suggested that combining the Trainer's Manual and the Coursebook into one document for the trainers would promote ease in handling. Other suggestions included improving some of the photographs in the coursebook, producing additional videos, and converting the open-ended test format to a multiple choice test for the field test planned for Phase II.

Phase II Objectives

The objectives of the current research where to: .

- Develop and pilot test a workshop to train instructors to present the provider's workshop, and
- Conduct a field test of the provider's workshop.

Data Collection and Results

Pilot Test of the Instructor's Workshop

A two-day workshop for training instructors was developed and pilot tested on June 5 and 6, 1989. Nineteen people participated. Of those, sixteen complete sets of data were obtained. Participants were instructed in the contents of the provider's workshop materials and given additional background information in fire safety, developmental disabilities, board and care operations, and training techniques. Pre- and post tests were administered. Results showed an average

group gain of 38% percentage points. Course evaluations completed by the group suggested a strong overall approval of the workshop presentation, content, and training aids. Following the workshop, the twelve of the sixteen eligible participants successfully conducted workshops for board and care providers at eight sites in Maryland and completed their requirements for certification. A survey of those instructors who had completed a workshop indicated that they approved overall of their training, the Instructor's Manual, the course materials and believed that the providers both enjoyed the workshop and learned from it.

Field Test of the Fire Safety Workshop for Operators and Staff

A one day workshop for training board and care providers was developed and pilot tested during Phase I of this project. The field test of the workshop was conducted at eight sites throughout the state of Maryland. Approximately 263 providers attended the workshops. Of those 144 complete sets of data were obtained and used in the data analysis. Results of that analysis showed that participants' mean score improved from pre- to post test an average of 24%. As a group, they improved at least slightly on all test items. Results of the course evaluation suggest a strong approval by participants and a believe that they had gained knowledge of fire safety.

Information collected by observed showed that instructors had generally followed the program as it was intended to be presented. Due to lack of time, however, in most workshops instructors omitted certain sections. The omitted sections varied from instructor to instructor. Instructors tended to spend more time than had been allotted on the modules covering fire behavior and life safety standards, and less time on all other modules. Module 7 which presented suggestions for the providers to conduct staff and resident training in their residences was not taught in any of the field test sites.

Conclusions and Recommendations

The current study has taken a major step towards the development of a uniform, validated fire safety training system for board and care operators. The goal of the Instructor's Workshop, to train participants to present the Provider's Workshop in a uniform manner was at least partially fulfilled. Field test results indicate a broad, positive acceptance of the workshops.

The dilemma, however, of reducing the scope of the Provider's Workshop so that it could be covered in one day and at the same time include all of the information that providers need to know remains to be resolved. Data from all data sources (instructors, participants, observers) strongly suggest that the amount of information presented is overwhelming to providers and instructors.

Recommendations

The following list presents our principal conclusions as regards to changes needed in the program for Phase III:

1. During the pilot test of the Instructor's Workshop, a strong emphasis was placed on the content (fire safety and its implications for people with developmental disabilities). More emphasis needs to be placed on presenting the material in an interactive format–e.g., instructors must ask questions, encourage participants to be active learners. To achieve that goal, BWA will revise the format of the Instructor's Workshop to allow time for participants to practice teaching portions of the Provider's Workshop, and will present the Provider's Workshop in one day, modeling the method that it should be presented to providers. Also, to achieve that goal, BWA will add short QUIZZES at appropriate points in the Provider's Coursebook and other response type activities. BWA also will develop Guidelines for Presenting Workshop including training techniques and criteria for selecting a site. This material will become part of the Instructor's Workshop training and a resource for the instructors in the field.

2. The consensus of all data sources suggests that there was too much information to be covered in a single day. Not only was there not enough time to present all of the materials, but participants were "overwhelmed" with the amount of technical information they tried to absorb. BWA proposes to respond to that problem both through revising the Coursebook and by improving the training in the Instructor's Workshop. BWA asserts that, if the material were presented as described in the Instructor's Manual, it could be covered in the time allotted without overwhelming the participants. Although the information presented in the Participant's Coursebook was important and much of the material will be useful as a reference after the workshop, BWA will reduce the length of the Coursebook by simplifying the information in the module on fire behavior, and by removing pages of the Coursebook that were not covered in any workshop and which appear not to serve a strong purpose in presenting the major objectives.

3. The training aids produced for the Provider's Workshop which every instructor received as part of the training package included: The Instructor's Manual, the Provider's Coursebook, two videos (Need for Fire Safety, and Flashover: Point of No Return), and an audiocassette (Human Behavior in Fires.) Information from all data sources suggests that these aids were acceptable and adequate to present the content. All sources agreed that the Provider's Coursebook should be permanently bound rather than presented in loose leaf, 3 hole punch format. The training aid with the lowest approval was the audiocassette. In our view, it was the format, not the content, that contributed to the low rating. When future funds are available, this training aid could be converted to a videotape. Additional training aids will be made available through a Continuing Education Program.

4. Data from all sources agreed strongly that the open-ended question format used for the pre- and post test was unsuitable for the Provider's Workshops due to unreliability and difficulty in administration. Revising these instruments to a multiple choice format could serve to improve reliability and to allow more time during the Provider's Workshop for presenting the content. BWA proposes to develop two forms of a multiple choice instrument that can be used for pre- and post testing.

5. The major task ahead for BWA during Phase III of the project will be to gain acceptance of the system by licensing agencies, national associations for board and care providers, members of fire marshall offices and local fire departments, and others who would be in a position to present and require fire safety training. One method that will be pursued is to seek peer review by developing papers and presentations and seeking to find audiences in professional publications and conferences.

Chapter 1

Design of the Study

This chapter describes the study design and procedures that were followed.

Background

The long range goal of the project to develop a Fire Safety Certification System for Board and Care Operators is to establish a training certification system whereby operators and staff of board and care homes for residents with developmental disabilities throughout the United States can receive uniform, validated fire safety training. Project staff was assisted by members of an Advisory council that met in a focus group format to discuss project issues and make recommendations regarding system design, course content, administrative procedures, types of materials, and other topics. Focus Group members included experts in fire safety, developmental disabilities, board and care operations, and training.

During Phase I of the project, the course content for the Board and Care Provider's Workshop was developed. A coursebook, training aids, and an instructor's manual were then produced and pilot tested with staff of Melwood Training Center, Nanjemoy, Maryland, a non-profit organization that operates several alternative living units and group homes for adults with developmental disabilities. Training aids included a video titled "The Need for Fire Safety," an audiocassette titled "Human Behavior in Fires," and 14 job aids–checklists for providers to use to conduct inspections or record fire drills and other activities. The results of the pilot test were reported in the Phase I Final Report dated December 20, 1988. 1988

Also during Phase I, the system was designed to include four components: the fire safety training workshop for board and care operators and staff, a workshop to train certified instructors (individuals who would led these workshops), a continuing education program, and a system network.

During Phase II of the project, the workshop for instructor's was developed and pilot tested. Sixteen participants completed the two-day workshop including the requirement to conduct a workshop for board and care operators within 90 days of the training. In all, eight workshops were conducted with 249 providers in attendance.

Purposes of the Study

The primary purposes of the study described in this report were:

1. To determine how effective the workshops were at preparing instructors to lead the workshop for providers and at conveying information about fire safety to providers, and
2. To collect information about the instructor's training program and the provider's workshop which would aid project staff in improving future versions.

Organization of the Report

The design of the pilot test of the Instructor's Workshop is described in Chapter 2 of this report. Results from the pilot test are presented in Chapter 3. The design of the field test of the Provider's Workshop is described in Chapter 4 and the results in Chapter 5. Chapter 6 presents the results from a ninth workshop conducted after results from the field test had been analyzed. Trainers incorporated suggestions from a review of the results by the project's Advisory Council in a Focus

Group meeting on June 26, 1989. Additional information was also sought from the twelve instructors who had led the field test workshops. The results of the follow-up survey are presented in Chapter 7.

The next five sections of this report present summaries of the findings, problems, and recommendations for changes to both workshops and the workshop materials. Chapter 8 summarizes all of the findings, the problems identified, and possible solutions for future workshops or editions of materials. The next five sections, Chapters 9 through 13, present recommendations for improving the Instructor's Workshop, the Instructor's Manual, the Provider's Workshop, the Provider's course materials, and the Evaluation Instruments.

The final chapter in this report is titled "Implications for Phase III" and describes the manner in which the recommendations will be implemented in future workshops, in future editions of course materials, and with regards to the development of new training aids.

Chapter 2

Instructor's Workshop Pilot Test – June 5-6, 1989

Purpose of the Instructor's Workshop

The primary purpose of the Instructor's Workshop was to prepare participants to lead workshops for board and care providers using the Participant's Coursebook, other training aids, and evaluation instruments. A second purpose was to provide these future instructors with additional information about fire safety, developmental disabilities, needs of the board and care owners and operators, and training techniques needed to effectively present the workshop.

Recruitment of Trainers for the Instructor's Workshop

Trainers to lead the Instructor's Workshop were chosen from the Project Advisory Council and BWA project staff. They were Dr. Bonnie L. Walker, Ms. April L. Walker, Mr. Harry Bradley, P.E., and Ms. Terezie Bohrer. They were chosen because of their expertise in the fields of fire safety, fire protection engineering, developmental disabilities, or educational training. A team teaching approach was used and each trainer was assigned modules to teach related to their field of expertise. Each of the trainers were familiar with the modules they were assigned to teach. In each case they had been closely involved in the development of the course content and in some cases in the writing of the course materials. The four trainers met for planning sessions to develop the agenda and presentation.

Agenda

The workshop took place over a two day period. The approach was to present the Fire Safety Workshop for Board and Care Operators and Staff to the participants as they would be expected to teach it with the addition of enrichment materials. Also included on the program were four mini-lessons about training techniques. (A copy of the agenda is attached as Appendix A.)

Materials

The pilot test version of the Instructor's Manual was 3 hole punched and packaged in a 3 ring binder. Each module was separated with oversized divider pages printed on lavender coverstock. The Instructor's Manual was 143 pages, printed on one side only.

The manual consisted of two types of materials:

1. A reduced version of the activities pages from the Participant's Coursebook printed in black ink with a statement of the activity objective, instructions for presenting the information in red ink at the top of the page. To the right of the reduced coursebook, also in red ink, were key points and interesting facts to further guide the instructors in presenting the materials.
2. In addition to the activity pages, the instructor's manual also had "pink" pages which were summaries of the modules, a list of objectives, instructions for introducing the modules, response sheets to activities in the Coursebook, and additional information on various subjects.

In addition to the manual, each instructor received a training aids kit which included two videotapes, an audiocassette, evaluation instruments (pre- and post test, course evaluation). Four additional training aids were used in the Instructor's Workshop: two 16mm films produced by the

National Fire Protection Association, one videotape developed under a grant from the Department of Defense, and one videotape distributed by the Tobacco Institute. (See Figure 2-1 for a description of all seven audiovisual training aids listed according to the module in which they were used.)

Figure 2-1
Audiovisual Aids Used in Instructor's Workshop

Introduction Module The Need For Fire Safety

The Need for Fire Safety is an eight minute video produced by Bonnie Walker and Associates for the National Fire Safety Certification System Workshops. The purpose of the video is to point out the need for fire safety in residential care homes and to demonstrate various fire safety devices that are essential for people with developmental disabilities.

Module One Fire Behavior

Flashover: Countdown to Disaster is a sixteen minute film produced by the National Fire Protection Association for general audiences. The purpose of the film is to demonstrate the path and speed in which smoke and flames can spread through a building.

Flashover: Point of No Return is a twelve minute video produced by the National Bureau of Standards for the staff of nursing homes. The purpose of the video is to demonstrate how a fire can be contained and how fire deaths can be prevented through the use of tight doors and proper fire evacuation procedures.

Module Three Human Factors in Fire Safety

Silent Response is an eight minute video produced through funding from The Tobacco Institute for fire emergency personnel. The purpose of the video is to help people recognize and understand how a person with hearing impairments might react in an emergency situation.

Human Behavior in Fires is a seven minute audiocassette produced by Bonnie Walker and Associates for the National Fire Safety Certification System Workshops. The purpose of the audiocassette is to point out the characteristics of human behavior in fires as determined by fire safety research and to examine how people's background and previous experiences will affect the way that they react to a fire emergency.

Module Four Fire Hazards

Everybody Needs a Buddy Sometime is a twelve minute video produced through funding by the Department of Defense for the general audiences. The purpose of the video is to demonstrate how the buddy system can be used to evacuate people with physical disabilities from highrise buildings during a fire emergency.

Module Five Fire Safety Devices

Know Your Fire Extinguisher is a fifteen minute film produced by the National Fire Protection Association. The purpose of the film is to explain the three different types of fire and the various types of fire extinguishers that may be used to put out those fires.

Recruitment of Instructors

The majority of the participants who attended the Instructor's Workshop (17 of 19) were case managers for the State of Maryland's Certified Adult Residential Environment Program (CARE), commonly referred to as Project Home. One participant was the Housing Specialist for Project Home. One participant was a fire safety trainer and a member of the Project's Advisory Counsel. Project Home was originally established to provide supervised housing and case management services to persons who had been discharged from state mental hospitals. However, in 1978, the target population was broadened to include adults with developmental disabilities from the community. The program is operated by the Maryland Department of Human Resources and local Departments of Social Services.

Setting for the Study

The Instructor's Workshop took place at the offices of Bonnie Walker and Associates in Bowie, Maryland on June 5 and 6, 1989. The two-day training was conducted in a spacious training room in a round table lecture format. The conference room was equipped with a projection screen, overhead projector, 16mm film projector, videotape player and monitor, an audiocassette player, chalkboard, and flipchart. Three BWA staff members were also present to videotape the workshop, assist in data collection, and observe the proceedings.

Sample

Eighteen Project Home employees and one fire safety specialist participated in the Instructor's Workshop. To qualify for the Instructor's Workshop, participants completed an application for Level II Training (the Certified Instructor's Program). Requirements for the workshop had been established by the Project Advisory Council. Each person was required to have at least an AA degree and to have prior experience in one or more of the following areas: developmental disabilities or other special needs population, residential care facilities or other health facilities, fire safety, or training. The participants who qualified for the June 5-6 workshop primarily had experience dealing with the certification and supervision of residential board and care homes. Table 2-1 below presents information on how the instructors met the criteria for selection. The information was obtained from pre-registration forms that were filled out by participants prior to the training. (See Appendix B.)

Table 2-1
Criteria for Selection of Instructors (N=19)

Requirement	Number Meeting the Requirement	Percentage	Number Not Meeting the Requirement	Percentage
Education	19	100%	0	0
Developmental Disabilities	18	94.8%	1	5.2%
Residential Care Facilities	18	94.8%	1	5.2%
Fire Safety	9	47.4%	10	52.6
Training	6	31.5%	13	68.5%

Data Collection and Analysis

Preregistration Form

To assess their qualifications for the Instructor's Workshop, each participant was asked to complete a preregistration form. Copies of the form were mailed to the Project Home Coordinator a few weeks before the training. Ten forms were received through the mail and nine additional forms were completed at the training site.

The preregistration forms had been distributed by mail to the participants about three weeks prior to the training. Additional forms were distributed to members of the group who had not previously completed a form when they arrived at the workshop. The results were analyzed to confirm that the participants were qualified to be trained as instructors.

Pre-/Post Test

Two versions of the workshop test, Form A and Form B, was developed to assess the cognitive learning of the participants. Each form contained 21 items. The item with the same number on each one tested the participants' knowledge of the same module and content domain. Test questions and standardized responses were reviewed for content validity by experts in fire safety, developmental disabilities, data analysis, and training. Table 2-2 below identifies the location in the course materials where the information required to answer each item could be found. Appendix A contains a copy of both forms of the test and the standardized answer key.

The pre- and post test items had been modified from those used during the pilot test. In that version questions had been written completely open-ended such as: "Why is there a greater need for fire safety in residences for people with developmental disabilities?" Participants were given points for each response resulting in a wide range of scores for each item and greatly affecting the reliability of the scores. Further, since the same or similar items appeared on the pre- and post tests, some participants who had listed several responses on the pretest, listed fewer responses on the post test, thus resulting in lower scores. To correct the problem, the field test version of the test modified items to read: "List 3 reasons why there is a greater need for fire safety in residences for people with developmental disabilities." Some of the items were also modified slightly to improve clarity and readability. (See Appendix C for the Scoring Guide to Form A and B.)

Table 2-2
Match of Test Form A and B Questions and Course Materials

Item Number	Form A	Form B
1	Introduction, p. 3	Introduction, p. 3
2	Module 2, p. 10, Module 4, p. 15	Module 4, p. 16
3	Module 1, p. 12	Module 1, p. 11
4	Module 2, p. 7	Module 2, p. 7
5	Module 6, p. 4	Module 6, p. 4
6	Module 2, p. 6	Module 2, p. 6
7	Module 2, p 10	Module 2, p. 9
8	Module 3, p. 1	Module 3, p. 3
9	Module 3, p. 4	Module 3, p. 4-12
10	Module 3, p. 5-12	Module 3, p. 15 (IM*), 6, p. 4
11	Module 3, p. 14	Module 3, p. 14
12	Module 4, p. 9	Module 4, p 7
13	Module 4, p. 4-5, (IM)	Module 4, p. 1
14	Module 5, p. 6	Module 5, p. 2
15	Module 5, p. 14	Module 5, p. 14
16	Module 5, p. 10	Module 5, p. 10
17	Module 5, p. 1 (IM)	Module 6,p.4
18	Module 6, p. 7	Module 6, p. 8
19	Module 6, p. 9	Module 6, p. 10
20	Module 6, p. 3	Module 6, p. 3
21	Module 2, p. 5	Module 2, p. 5

* Instructor's Manual

Participants received Form B as a pretest and Form A as a post test. The tests were scored based on a standardized answer key that had been reviewed for content validity by experts in fire safety, developmental disabilities, data analysis, and training. Each item was assigned a maximum

point value based on the number of responses required. The maximum score on both forms of the test was 50.

Data were analyzed to determine the mean score for the total group and the mean score on each item. Data were also analyzed by item to determine whether or not a majority of the participants had improved their scores on a majority of items.

Course Evaluation Form

A fifteen item Likert–type evaluation instrument was developed to assess the participants' perceptions of their own learning. In addition, the participants were asked to suggest ways to improve the Instructor's Workshop. (See Appendix D.)

The participants' responses to each item were tabulated, converted to percentages, and presented by item and response category.

Figure 2-2
Match of Modules and Items on the Course Evaluation Form

Module	Item
The Need for Fire Safety	1,8
Fire Behavior	none
Life Safety Standards	7
Human Factors in Fire Safety	4, 5, 13
Fire Hazards	9
Fire Safety Devices	none
Fire Emergency Planning	2
Staff and Resident Training	none
Workshop	3, 6, 9, 10, 11, 12

Training Aids Evaluation Forms

Following the training, the participants completed an evaluation of the seven audiovisual training aids used in the workshop. Each of the training aids was rated on a scale of 1 to 5, with 1 as poor and 5 as excellent. (See Appendix E.)

The participants' responses to each item were tabulated, converted to percentages, and presented by item and response category.

Training Observation

During the training, one person observed and recorded observations including the time each module began and ended. The observer was instructed to note any questions participants asked, information provided by instructors not in the manual, and other events. In addition, a videotape was made of the entire two day training. The videotape was used to record and analyze participant questions and to provide suggestions for future improvements to both the coursebook and the instructor's manual. A transcription of the videotape was prepared and analyzed by project staff.

Information obtained from the observer's notes and the videotapes was compiled and analyzed. Questions asked by the participants and trainers that were not in the instructor's manual or coursebook were noted, as well as pertinent information related to the teaching of each module, such as the time required to teach each module and the success of the teaching technique used. The results of the analysis are presented as Tables 3-7, 3-8 and 3-9 in Chapter 3.

Chapter 3

Presentation of the Instructor's Workshop Results

Introduction

The findings of this study represent an analysis of the data obtained from nineteen participants who participated in the pilot test of the instructor's workshop held at the offices of Bonnie Walker and Associates, Bowie, Maryland on June 5 and 6, 1989. All of the participants except two were case managers for Project Home. One participant was the Housing Specialist for Project Home, and the other was a fire safety training expert who is also a member of the project's Advisory Counsel. Data were obtained from pre- and post tests, the course evaluation, the training aids evaluation, from observations by an observer, and from a transcript of the videotape of the training.

Pre- and Post Test Results

Question One: *Did the participants, as a group, improve their scores from pre– to post test?*

Scores of each participant who completed both a pre– and post test were totaled. Descriptive data for both the pretest and post test were calculated using StatView™, a computer program for the Macintosh published by BrainPower Inc., 1986. Results indicate that participants' mean score improved from 19.75 on the pretest to 38.625 on the post test for a mean gain score of approximately 19 points. Results can be seen in Table 3-1 below.

Table 3–1
Presentation of Descriptive Data for the Pretest and the Post Test (N=16)

X_1: Pretest

Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
19.75	5.36	1.34	28.733	27.141	16
Minimum:	**Maximum:**	**Range:**	**Sum:**	**Sum Squared:**	**# Missing:**
11	30	19	316	6672	0

X_2: Post Test

Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
38.625	3.263	.816	10.65	8.449	16
Minimum:	**Maximum:**	**Range:**	**Sum:**	**Sum Squared:**	**# Missing:**
32	44	12	618	24030	0

To test the significance of the difference, a simple regression analysis was performed between the pretest mean (dependent Y variable) and the post test mean (the independent X variable.) The results of that analysis are presented in Table 3-2 below.

Table 3-2
Comparison of Pre- and Post Test Scores Using Regression Analysis (N=16)

Simple Regression X_1: Pretest Y_1: Post Test

DF:	R:	R-squared:	Adj. R-squared:	Std. Error:
15	.28	.078	.013	3.243

Analysis of Variance Table

Source	DF:	Sum Squares:	Mean Square:	F-test:
REGRESSION	1	12.534	12.534	1.192
RESIDUAL	14	147.216	10.515	p = .2934
TOTAL	15	159.75		

No Residual Statistics Computed

Simple Regression X_1: Pretest Y_1: Post Test

Beta Coefficient Table

Parameter:	Value:	Std. Err.:	Std. Value:	t-Value:	Probability:
INTERCEPT	2.367				
SLOPE	1.353	.3	.718	4.503	.0002

Confidence Intervals Table

Parameter:	95% Lower:	95% Upper:	90% Lower:	90% Upper:
MEAN (X,Y)	17.321	25.155	18.002	24.474
SLOPE	.724	1.981	.833	1.872

Figures 3-1 and 3-2 below depict the relationship between the instructors' pretest and post test scores in a scattergram and then in histograms.

Figure 3-1
Scattergram showing Correlation Between Instructors' Pre- and Post Test Scores (N=16)
y = .171x + 35.257, R-squared: .078

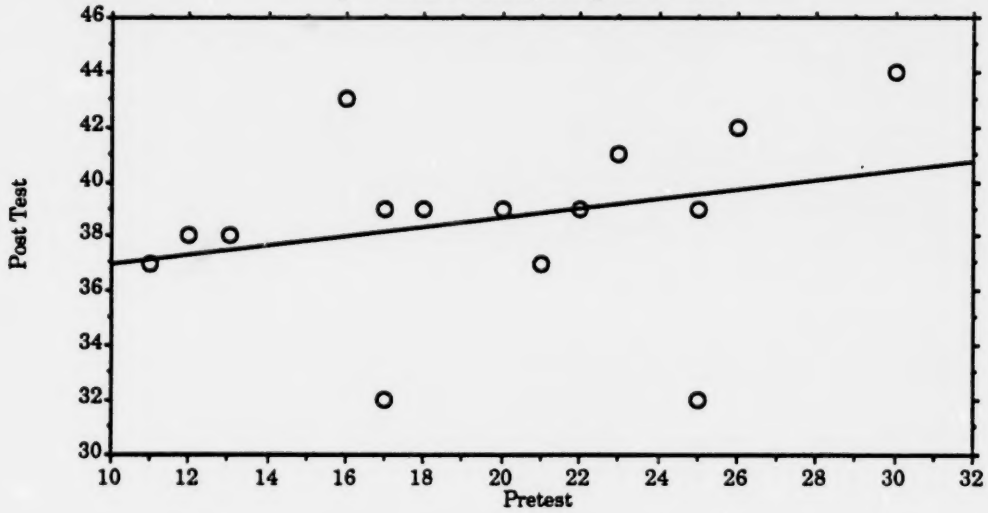
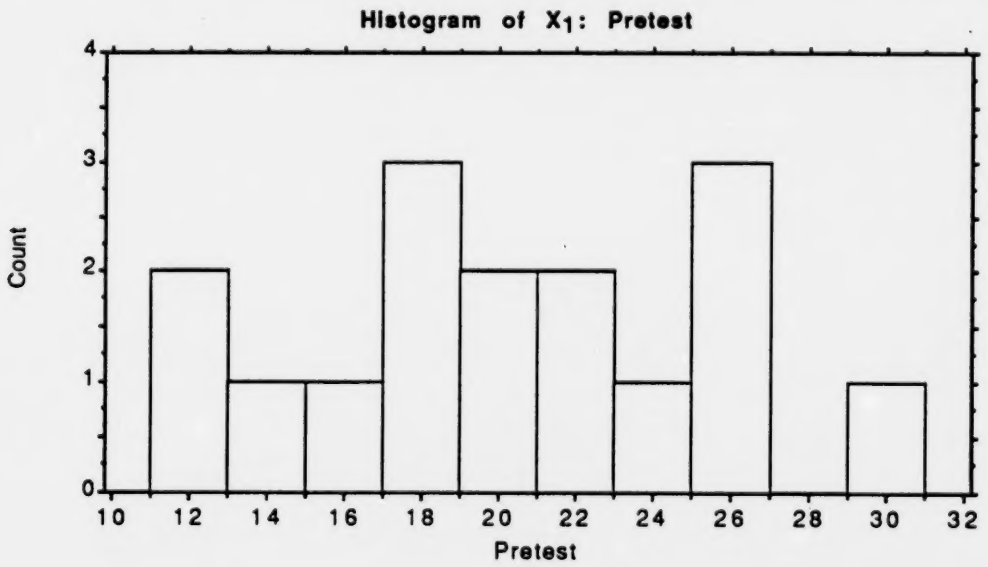
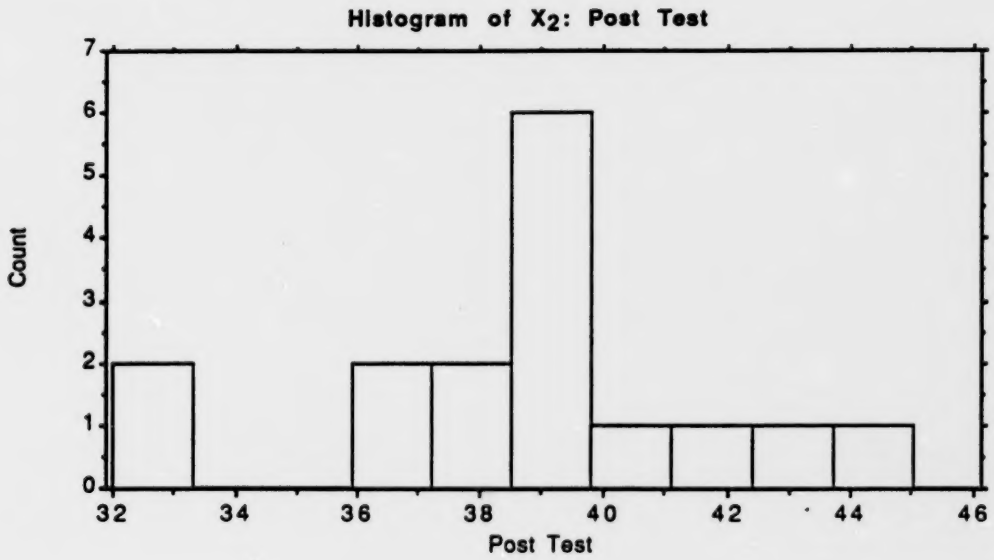


Figure 3-2
Histograms showing distribution of Scores on Instructors' Pre- and Post Tests (N=16)




Histogram of X2: Post Test
Count
0
1
2
3
4
5
6
7
32
34
36
38
40
42
44
46
Post Test

Pre– and Post Test Results by Item

Question Two: *Did the participants improve their scores from pre– to post test on each item?*

The scores of each participant on each item of the pre– and post test were compared to determine how many of the participants showed an improvement between the pre– and post test on each item of the test. Results showed that they had improved at least slightly and often dramatically on all but three items. (See Table 3-3 below.) On Items 8, 9, and 12, the participants' mean scores were slightly less on the post test than on the pretest .

Table 3-3
Comparison of Pre- and Post Test Results by Item (N=16)

Item	Module	Maximum Points	Pretest Average	Post Test Average	Difference	Result
1	1	3	1.125	1.875	+.75	Improvement
2	4	5	2.5	4.625	+2.125	Improvement
3	1	2	0	1.438	+1.438	Improvement
4	2	2	.938	1.438	+.50	Improvement
5	6	2	.875	1.25	+.375	Improvement
6	2	2	.188	2	+1.81	Improvement
7	2	3	2	2.69	+.69	Improvement
8	3	2	1.75	.563	-1.19	Negative Result
9	3	2	1.25	.813	-.438	Negative Result
10	3	2	.625	2	+1.375	Improvement
11	3	3	1	2.125	+1.125	Improvement
12	4	1	1	.938	-.063	Negative Result
13	4	4	.313	2.94	+2.62	Improvement
14	5	2	.688	1.94	+1.25	Improvement
15	5	1	.438	1	+.562	Improvement
16	5	1	.313	.875	+.562	Improvement
17	5,6	2	.063	1.25	+.62	Improvement
18	6	2	1.38	1.94	+.558	Improvement
19	6	3	.375	2.06	+1.69	Improvement
20	6	3	2.188	2.88	+.687	Improvement
21	2	3	.75	1.94	+1.19	Improvement
Total			19.759	38.580	+18.236	
Ave.			.940	1.84	+.87	

Individual and Group Improvement by Item

Question Three: *Did the participants improve from pre- to post test on individual items?*

The data were also analyzed to compare the number of items on which each individual improved from pre- to post test. Results presented in Table 3-4 below show that a majority of the participants (15 out of the 16) showed improvement on a majority of the items (11 or more). On the average, participants improved or stayed the same on 19.25 of the 21 items.

Characteristics of the testing instrument and test environment were examined to determine problems which could have contributed to test unreliability particularly on items where participants' scores had decreased from pretest to post test. Factors noted were: (1) The items on Form A and Form B were not equal in terms of difficulty. (2) A fatigue factor influenced post test results since participants had spent two full days, and eight hours that day, in the workshop. Many of the participants had driven a substantial distance to the workshop site and faced a lengthy drive home after the workshop was dismissed. (3) In some cases, the sections of the module which covered the information tested on the items which had been omitted by the workshop trainers. (4) In some cases, the participants already scored the maximum number of points on the pretest and could not improve. (5) In some cases the participants may have been out of the room while a particular topic was being covered.

Table 3-4
Comparison of Performance by Individuals from Pre- to Post Test
by Workshop (N=16)

Participant	Improved	Same	Negative	Total
1	11	8	2	21
2	13	7	1	21
3	14	6	1	21
4	12	7	2	21
5	8	9	4	21
6	17	3	1	21
7	13	6	2	21
8	14	5	2	21
9	12	8	1	21
10	13	7	1	21
11	15	4	2	21
12	14	4	3	21
13	12	6	3	21
14	11	9	1	21
15	15	6	0	21
16	14	5	2	21
Total	**208**	**100**	**28**	
Mean	**13.0**	**6.25**	**1.75**	
Median	**13**	**6.5**	**2**	
Mode	**12**	**5,6,7,8**	**2**	
Range	**8-17**	**3-9**	**0-4**	

Affective Evaluation Results

The participants (after having completed the post test) also completed the Fire Safety Instructor's Workshop Evaluation Form, a Likert–Scale type instrument designed to measure their feeling about the content of the training they had just received and their ability to administer the training to care providers themselves. A copy of the form is included as Appendix D.

Results of the Course Evaluation

Question Four: *Did the participants have positive feelings about the workshop and their learning?*

The evaluation included eight items that measured participants' feelings about the cognitive content of the workshops. The remaining seven items measured feelings about the presentation of the workshop.

The results of the analysis presented below in Table 3-5 suggest an overall approval of the participants of the workshop and a feeling that they believed they had gained in knowledge during the two day workshop. Approximately 86% of the participants either agreed or agreed strongly with each statement. Since all the statements were positive statements about the training, that was the desired response. Item 8 which dealt with the importance of fire safety training for residential care providers and Item 9 which dealt with the hazardous consequences of smoking received the most positive rating. Item 3 which dealt with the participants' having a clear idea of how to present the workshop material to providers and Item 7 which dealt with licensing and certification standards received the least number of positive ratings.

Table 3-5
Participants' Attitudes Towards the Training and Their Learning Experience (N=17)

Items	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
1. I was motivated by this workshop to learn more about fire safety.	53%	41%	0%	6%	0%
2. I am able to identify and do something about fire safety issues.	35%	59%	6%	0%	0%
3. I have a clear idea about how to present the workshop materials to providers.	0%	41%	53%	0%	6%
4. I am comfortable with the terminology related to residential care facilities that I need to know to present the workshop.	12%	76%	6%	0%	6%
5. I am comfortable with the terminology related to developmental disabilities that I need to know to present the workshop.	23%	71%	6%	0%	0%
6. I am comfortable with the terminology related to fire safety that I need to know to present the workshop.	6%	70%	18%	0%	6%
7. I have a clear understanding about licensing and/or certification requirements related to fire safety.	6%	35%	53%	0%	6%
8. Fire safety instruction for residential care providers is important.	94%	6%	0%	0%	0%
9. I have a clear understanding of the consequences of smoking and other high risk behaviors.	94%	6%	0%	0%	0%
10. I was encourage during the workshop to ask questions, and to express my ideas and feelings.	53%	47%	0%	0%	0%
11.The instructors of this workshop were well prepared and were knowledgeable of the subject matter they presented.	41%	59%	0%	0%	0%
12. I would recommend this workshop to others.	41%	53%	6%	0%	0%
13. I have a clear understanding of the day-to-day responsibilities and tasks of residential care providers.	35%	59%	0%	0%	6%
14. The instruction and practice with respect to training that I received in this workshop was helpful.	24%	59%	12%	0%	0%
15. The training aids that the presenters used during this workshop were appropriate and helped me learn.	29%	71%	0%	0%	0%
Averages (rounded)	36%	50%	11%	<1%	2%

Results of the Training Aid Evaluation

Question Five: *Did the participants feel that the training aids were useful and appropriate?*

Seven different audiovisual aids were used during the Instructor's Workshop. At the conclusion of the workshop, participants were asked to fill out a Training Aid Evaluation Form and to rate each aid on a scale of 1 to 5, with 1 being poor and 5 being excellent. The results are presented in Table 3-6 below. The participants rated *Flashover: Countdown to Disaster* the highest, with 88% rating it as excellent. *Flashover: Countdown to Disaster*, a public domain video produced by the National Bureau of Standards, received the second highest rating. *Know Your Fire Extinguisher* was rated the lowest, with 18% of the participants giving it a poor rating.

Table 3-6
Participants' Attitudes Towards Training Aids Used in the Workshop (N=17)

Title	Excellent	Good	Average	Below Average	Poor	No Response
Flashover: Countdown to Disaster	88%	6%	0%	6%	0%	0%
Flashover: Point of No Return	76%	18%	0%	6%	0%	0%
The Need for Fire Safety	29%	47%	18%	0%	0%	6%
Human Behavior in Fire	18%	41%	29%	12%	0%	0%
Silent Response	12%	41%	35%	6%	0%	6%
Everybody Needs a Buddy Sometime	18%	23%	47%	0%	6%	6%
Know Your Fire Extinguisher	12%	18%	23%	29%	18%	0%
Total	40%	29%	22%	4%	1%	3%

Observation Data

Question Six: How did the workshop training vary from the plan in terms of time spent on each topic?

On Day One several of the participants arrived late and the workshop did not start until 9:00 a.m., a half an hour late. The Introduction, the Overview, and Training Tips Part I were shortened to make up time. Module One on Fire Behavior took 40 minutes longer than the allotted time. Module Two, Module Three, and Training Tips Part II took less than their allotted time. Day One ended on time at 4:30 p.m.

On Day Two the workshop started on schedule. Module Four on Fire Hazards took 33 minutes more than the allotted time. Modules 5, 6, and 7 took less time than had been allotted. The workshop ended on time at 4:30 p.m.

Table 3-7 below compares the time spent on each module with the time actually used.

Table 3-7
Time Expenditure for Training by Module in Minutes

Module	Time Allotted	Time Used	Difference
Day One			
Introduction	30	15	+15
Pretest	30	35	+5
Overview	30	10	−20
Training Tips, Part 1	30	11	−19
Introduction to Participant's Workshop	30	30	0
Module 1,Fire Behavior	60	100	+40
Lunch	60	45	−15
Module 2,Life Safety Standards	60	47	−13
Module 3, Human Factors in Fire Safety	120	85	−35
Training Tips, Part 2	30	15	−15
Day Two			
Training Tips, Part 3	15	23	+8
Module 4, Fire Hazards	75	108	+33
Module 5, Fire Safety Devices	120	103	−17
Lunch	60	44	−16
Module 6, Fire Emergency Planning	90	87	−3
Module 7, Resident Staff Training	30	3	−27
Continuing Education Program	15	7	−8
Training Tips, Part 4	15	13	−2
Post Test and Course Evaluation	30	35	+5
Total			

Question Seven: *How did the scope of the content vary from the planned presentation?*

A transcript was prepared from the videotape recording of the workshop and analyzed to determine the additional information given by the trainers and questions posed to trainers by the participants that was outside of the scope. A summary of those findings are presented below by module in Tables 3-8 and 3-9.

Table 3-8
Unplanned Information Provided by Trainers

Module	Comments
Introduction	• The issue of fires caused by arson was raised. • Legal liability was discussed.
Fire Behavior	•Woodstoves were briefly discussed. • The Triangle of Fire vs. The Tetrahedron of the Fire was explained. • Techniques and equipment used by firefighters was discussed.
Life Safety Standards	• Additional handouts summarizing Chapters 17, 20, and 21 of NFPA's Life Safety Codes were distributed.
Human Factors in Fire Safety	• Participants were asked "If you had to choose to have a disability, which would you choose? Which would you like to have least?"
Fire Hazards	• The dangers of frying food with oil was discussed. • The flow of electricity into appliances and the definition of voltage was discussed. • The insulation of fireplace chimneys was explained. • The hazards of deadbolts was discussed.
Fire Safety Devices	• The proper location of smoke detectors on the wall and ceiling was pointed out. • The advantages of hard-wired smoke detectors versus battery-operated detectors was discussed.
Fire Emergency Planning	None
Staff and Resident Training	None
CEP	None

Table 3-9
Unanticipated Participant Questions During Instructor's Workshop

Module	Questions
Introduction	•What are the risks from arson?
Fire Behavior	• Why won't a woodstove set off the smoke detector while burning toast will? •How can firefighters enter a room that is extremely hot without getting burned? •What should you do if you have a gas leak? •If you shut the doors and windows, won't the room explode?
Life Safety Standards	•Can the staff be sued if they are not doing all they should concerning fire safety? •Why are exit signs required above doors in residential homes?
Human Factors in Fire Safety	None
Fire Hazards	•What do the numbers on the chart "Risk of Death" mean? (Module 4, page 1) •Can you use blankets or baking soda to put out kitchen fires? •Does bending cords cause damage? •Are multi-outlet strips better than extension cords? •What should the clearance for my woodstove be? •What is the actual law concerning deadbolt locks? •What should I do about wandering clients?
Fire Safety Devices	•Where should smoke detectors be mounted? On the wall? On the ceiling? •Do all multiple station detectors have to have the same alerting mechanism, or can some have strobe lights while others have buzzers?
Fire Emergency Planning	•Do I have to have structural changes done to my home to make an escape route from the second floor?
Staff and Resident Training	None
CEP	None

Summary of Results by Module–Instructor's Workshop

Introduction Module- The Need for Fire Safety

The content from the Introduction Module was tested by Item 1 on the pre- and post tests, which dealt with the need for fire safety in residential care homes. A majority of the participants (10 out of 16) improved on this item. Five of the participants showed no change from pre- to post test, while one participant received a lower score the second time around.

Items 1 and 8 on the Course Evaluation measured participants' affective response to the Introduction Module. Results shows that 94% of the participants felt motivated by the training to learn more about fire safety and 100% of the participants agreed that fire safety instruction for residential care providers is important.

The video shown in the Introduction Module, *The Need for Fire Safety*, was rated above average or excellent as a training aid by 76% of the participants.

Module One–Fire Behavior

The content in Module One was tested by Item 3 on the pre- and post tests. Item 3 on the pretest asked the participants to define the term *flashover*. The matching item on the post test asked them to identify the danger of smoke inhalation. A majority of participants improved their score from pre- to post on Item 3 (13 out of 16). The remaining three participants showed no change in their score.

No items were included on the course evaluation to assess the affective response of the participants towards the information in the Fire Behavior module.

The video *Flashover: Countdown to Disaster*, produced by the National Fire Protection Association, which was shown during Module One, received the highest rating of all the training aids. It received an excellent rating by 88% of the participants. *Flashover: Point of No Return*, produced by the National Bureau of Standards, also shown in Module One, received the second highest rating with 76% of the participants rating it as excellent.

Module Two- Life Safety Standards

Items 4, 6, 7, and 21 on the pre- and post test measured content covered in Module Two, Life Safety Standards. The participants, as a group, showed on improvement from pre- to post test on all of these items.

Item 6, which was related to vertical openings, showed the largest gain average. A low score on the pretest item and a high gain indicated that most of the participants didn't understand the term vertical openings prior to the workshop, but understood the term after the workshop.

Item 21 asked participants to name the three components of a safe egress, also showed a strong gain. The majority of participants (10 out of 16) improved on this item from pre- to post test.

Fire safety code requirements (post test) and hazardous areas (pretest) were covered by Item 7. On these items, 9 out of 16 participants improved, 6 stayed the same, and one showed negative improvement. Lack of improvement could be attributed to the post test item being more difficult than the pretest item.

Item 4 tested participants' knowledge of interior finishes. Participants knew what interior finishes were and that they should be fire resistant, but only a few participants mentioned class ratings which was the desired response. Class ratings and fire-resistant interior finishes will be addressed further in the Continuing Education Program materials.

Participants' responses to Item 7 on the Instructor's Workshop Evaluation Form suggest that they were still somewhat unclear concerning licensing and/or certification requirements related to fire safety.

Module Three- Human Factors in Fire Safety

Items 8, 9, 10, and 11 measured cognitive learning related to client and staff characteristics, community resources, and human behavior in fires.

Participants showed positive improvement on both Item 10, dealing with the physical limitations of people with developmental disabilities, and Item 11, dealing with human behavior in fires.

A negative improvement was exhibited on Items 8 and 9. These negative responses can be attributed to two factors. First, Form B of the test which was administered as the post test was more difficult than Form A of the test which was administered as the pretest for Items 8 and 9. Second, the information needed to answer these items were not stressed during the workshop.

Affective responses to Module Three were measured on Item 5 of the Instructor's Workshop Evaluation Form. Of the participants, 94% expressed that they felt comfortable with terminology related to developmental disabilities.

The video *Silent Response* distributed by the Tobacco Institute was shown during Module Three. Although 53% of the participants felt that the video was above average, the majority also felt that the video was not suitable for the workshop because it was developed for fire emergency personnel. The audiocassette, *Human Behavior in Fires*, was rated above average or excellent by 59% of the participants.

Module Four-Fire Hazards

Module Four was measured by responses to Items 2, 12, and 13. On Items 12 and 13, participants showed a large positive gain. On Item 2, 100% of the participants improved from pre- to post test, and on Item 13, 94% of the participants improved. Thus, participants' knowledge of fire hazards appeared to dramatically increase during the workshop.

Item 12 showed a slight negative improvement which was because all 16 participants knew the correct pretest answer, while all but one knew the correct post test answer.

Item 9 on the Instructor's Workshop Evaluation Form measured participants' affective responses to information about fire hazards. All of the participants either agreed or strongly agreed that they had a clear understanding of the consequences of smoking with respect to fire safety.

The video *Everybody Needs a Buddy*, a program about evacuation of people with handicaps from a high-rise building in a fire emergency was produced under a grant from the Defense Department. It was rated as above average or excellent by 88% of the participants.

Module Five-Fire Safety Devices

Knowledge about fire safety devices was measured on the pre- and post test by Items 14 thorough 16. Items tested participants' knowledge of smoke alarms for people with hearing impairments, fire extinguishers, and sprinkler systems. Participants showed a positive gain on all of these items even though less time than was planned was spent on this module. The largest large gain was shown in the item measuring knowledge about smoke alarms for people with hearing impairments.

There were no items on the Instructor's Workshop Evaluation Form to measure affective responses to Module Five. The film, *Know Your Fire Extinguisher*, produced by the National Fire Protection Association, was shown during the Fire Safety Devices module. Only 30% of the participants rated the film as above average or excellent. This video was produced in the 1950's and some of the content was dated.

Module Six- Fire Emergency Planning

Finally, Items 5 and 17 through 20 dealt with topics related to fire emergency planning. Participants showed improvement from pre- to post test on all items, with a particularly large gain on Item 19 dealing with the frequency of fire drills. Other item topics included the requirements

for choosing alternate evacuation routes, the hazards of fire ladders, tasks for the staff and residents in a fire emergency, and ways of improving fire safety in a home.

Item 2 on the Instructor's Workshop Evaluation Form measured the affective responses of participant's to Module 6. Over 94% of the participants agreed or strongly agreed that after the workshop they could identify and do something about fire safety issues and problems.

Module Seven–Resident and Staff Training

There were no pre- or post test or affective evaluation items to measure the response to Module Seven.

Chapter 4

Field Test of Provider's Workshop – June 12-21, 1989

Setting for the Study

The field test of the Fire Safety Training for Board and Care Operators took place at eight sites throughout the state of Maryland. Project Home care providers participated in one day workshops. Project Home is a state program operated by departments of social services throughout Maryland. This program provides Certified Adult Residential Environment (CARE) homes where disabled persons 18 years of age and older are accepted, cared for, and supervised. This program serves individuals who are mentally ill (41%), elderly (32%), developmentally disabled (25%), diabetic (1%), and homeless (1%). CARE homes are usually private homes which accept the placement of disabled persons through Project Home. As of November 1988 there were 365 care providers, 404 approved Project Home sites, and 929 certified beds.

Sample

Two hundred and forty-nine people participated in the field test of the Fire Safety Training for Board and Care Operators. Of the total number of participants, 144 people completed both the pre- and post test, 176 completed the post test, 45 people completed only the pretest and 29 completed neither a pre- or a post test. Only 144 out of the 151 people completing both the pre- and post test were considered in the data analysis. Six of the participants mailed in their post test too late to be included in the analysis. One married couple completed the pretest individually and the post test together, making their scores ineligible for the analysis. Only those participants who completed both a pretest and a post test were included in the data analysis measuring differences from pre- to post test.

Figure 4-1
Workshop Participants

Number completing pre-and post test	151*
Number completing pretest and no post test	45
Number completing post test and no pretest	24
Number who attended but completed no tests	29
Total number attending	249

* 6 participants mailed in the post test after the workshop. A few couples took the pretest separately and the post test together. Those scores are not included in the data analysis measuring differences between pre- and post tests.

The majority of the participants were care providers from Project Home with one to three clients living with them in residential homes or apartments. A few participants were Project Home case workers. Tables 4.1 to 4.7 below present information about the participants collected on the Preregistration Form (See Appendix B). These data can be used to develop a general profile of the participants.

Table 4-1
Distribution of Workshop Participants by Experience With Disabilities (N=139)

Disability	Total	Percent *
Mental Disability	106	76%
Mental Retardation	62	45%
Mobility Impaired	34	24%
Hearing Impaired	20	14%
Visual Impairments	19	14%
Epilepsy	19	14%
Other	15	11%
Autism	8	6%
Cerebral Palsy	7	5%

* The percentages do not add up to 100% because participants responded to more than one item.

Table 4.2
Distribution of Workshop Participants by Years Experience with People with Disabilities (N=139)

Years	0-1 Years	1-5 Years	6-10 Years	11+ Years	NR
Total	8	65	34	27	5
Average	6%	47%	24%	19%	4%

Table 4.3
Distribution of Workshop Participants by Areas of Special Training (N=139)

Areas of Special Training	Total*	Percentage
Nutrition	62	45%
Medication	49	35%
Management	45	32%
Developmental Disabilities	44	32%
Rehabilitation	37	27%
No Response	30	22%
Education	24	17%
Recreation	23	17%
*Other	22	16%

* Other Responses included Social Work, Personal Care, Intensive Behavior, Special Olympics, Psychiatric Nursing, Nursing,Vocational Training, Housing, and Counselor.

Table 4.4
Distribution of Workshop Participants by Education Level Attained (N=139)

Education Level	Total	Percentage
High School	100	72%
Elementary School	12	9%
A.A. Degree	9	7%
Bachelor's Degree	8	6%
Master's Degree	6	4%
Doctorate	2	1%
No Response	2	1%

Table 4.5
Distribution of Workshop Participants by Years at the Facility (N=139)

Years	0-1 Years	1-5 Years	6-10 Years	11+ Years	NR
Total	18	72	33	7	9
Percentage	13%	52%	24%	5%	6%

Table 4.6
Prior Fire Safety Training of Workshop Participants (N=139)

Previous Training	Yes %	No %	No Response
Previous Fire Safety Training	43%	55%	2%
Fire Safety Training at the Same Facility	6%	94%	0%
Experience Training other Staff	29%	40%	31%
Experience Training Clients	61%	19%	19%
Experience with a Fire Emergency*	14%	73%	13%

*Responses include: Fire in 1980, minor injuries and damages. Careless smoking by client while sitting in a chair. The fire was smoldering and water was put on the fire. A child was playing with matches and started a fire.

Table 4-7
Length of Previous Fire Safety Training (N= 60)

Length	One Hour	2-4 Hours	1/2 Day	One Day	One day +	No Response
Total	8	20	1	20	3	8

Data Collection and Analysis

Preregistration Form

To collect information regarding the demographic characteristics of the field test group, each participant was asked to complete a Preregistration Form.(See Appendix B.) Copies of the form were mailed to supervisory personnel at Project Home a few weeks before the training. Additional copies of the form were distributed at the training.

Preregistration forms were distributed to participants about three weeks prior to the training. BWA received ninety-six preregistration forms from individuals prior to the training. Forms from forty-six additional providers were collected at the training sites. Preregistration data were analyzed only for those participants who completed the workshop, N=139. Five participants completed the workshop but did not complete a preregistration form. (See Tables 3.1 through 3.7.)

Pre-/Post Test

A pre-post test was developed to assess the participants' knowledge of fire safety issues before and after the workshop. The test questions were reviewed for validity by experts in fire safety, developmental disabilities, data analysis, and training. Two versions of the test, Form A and Form B, were developed with 21 items each. Each item with the same number on each form of the test corresponded to the same module and tested the same knowledge domain. See Chapter 2, page 14, Table 2-2, Match of Form A/B Questions and Module which identifies the module and page number in the Coursebook that contains the information requested in each item.

In order to determine whether Forms A and B were comparable, participants in Workshops 1,4, 6, and 8 were assigned Form A as a pretest and Form B as a post test. In Workshops 2, 3, 5, and 7 participants received Form B as the pretest and Form A as the post test. Analysis of the results showed that Form B of the test was slightly more difficult than Form A. The group that took Form B as their pretest and Form A as their post test showed a slightly higher gain than those that took A as their pre-test and B as their post test. (Results are presented on page 26.)

The tests were scored based on a standardized answer key that has been reviewed by experts in fire safety, developmental disabilities, data analysis, and training. The maximum possible score was 50.(Appendix C is the answer key for Forms A and B.)

The data from the 144 participants who completed both a pre- and post tests were analyzed by individual, by item, and by workshop. The data were also analyzed by Group A/B and Group B/A.

Course Evaluation Form

A Likert-type evaluation instrument was developed to assess the participants' affective learnings. The evaluation contained fourteen items to assess the participants' perception of their own learning. (See Appendix D for a copy of the form.) Participants were instructed not to put their names on this form.

After completing the workshop, participants were asked to fill out a course evaluation. The participants' responses to each item on the evaluation were totaled and converted to percentages to determine whether they believed they had learned the information. These results were tabulated and presented by item and response.

Provider Survey

A questionnaire containing sixteen items was developed to better understand the needs and environment of residential care facilities. The survey items were designed to gain information on the types of facility that the participants operate, the types of fire safety devices that the facilities contain, and the characteristics of the residents that live in the facilities. (See Appendix F for a copy of the form.) Participants were instructed not to put their names on this form.

After completing the workshop, participants were asked to fill out a survey. The results of the survey were compiled and presented in tabular form.

Training Observation

During each workshop one representative of BWA observed and recorded observations. The observer noted the length of time spent on each module, the person who taught the module, and what pages were covered or skipped. In addition, the observer recorded responses to the training and variations from the planned structure using the Instructor's Manual.

Information from the eight observers was combined and analyzed so that all of the unexpected events were noted. Those events included questions the trainers or participants asked that were not covered by the training material; questions or information that were not asked or covered that were in the training materials; and interruptions in the training. The information per module was compared with items on the post test on which participants scored poorly. Information from the eight observers was compiled and summarized and used to make recommendations for changes in the training materials and the Instructor's Workshop.

Chapter 5

Presentation of the Provider's Field Test Results

The findings of this study represent an analysis of the data obtained from the 144 participants who completed both the pre- and post tests in eight one-day fire safety workshops held at various sites in the state of Maryland during the period from June 12, 1989 to June 21, 1989.

Pre- and Post Test Results

Question One: *Did the participants, as a group, improve their scores from pre- to post test?*

The scores of each participant on the pre- and post test were totaled. Description data were compiled using StatView™, a computer statistical analysis published by BrainPower, Inc. in 1986. The results indicate that the participants' mean score improved from 12.424 points on the pretest to 24.368 on the post test, a mean gain score of approximately 12 points. Those results are presented in Table 5-1 below.

Table 5.1
Presentation of Providers' Descriptive Data for the Pretest and Post Test (N=144)

X_1: Pretest

Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
12.424	6.438	.537	41.449	51.821	144
Minimum:	**Maximum:**	**Range:**	**Sum:**	**Sum Squared:**	**# Missing:**
1	30	29	1789	28153	0

X_2: Post Test

Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
24.368	8.963	.747	80.332	36.781	144
Minimum:	**Maximum:**	**Range:**	**Sum:**	**Sum Squared:**	**# Missing:**
0	41	41	3509	96995	0

To test the difference between the pre- and post test average scores for statistical significance a simple regression test was performed on the data, shown in Table 5.2, which indicated that the higher one had scored on the pretest, the higher that individual scored on the post test. In other words, individuals gained in proportion to their original knowledge. Results showed that the difference was statistically significant at the probability level of .0001.

Table 5-2
A Regression Analysis of the Differences Between Pre- and Post Test Scores (N=144)

Simple Regression X_1: Pretest Y_1: Post Test

DF:	R:	R-squared:	Adj. R-squared:	Std. Error:
15	.28	.078	.013	3.243

Analysis of Variance Table

Source	DF:	Sum Squares:	Mean Square:	F-test:
REGRESSION	1	12.534	12.534	1.192
RESIDUAL	14	147.216	10.515	p = .2934
TOTAL	15	159.75		

No Residual Statistics Computed

Simple Regression X_1: Pretest Y_1: Post Test

Beta Coefficient Table

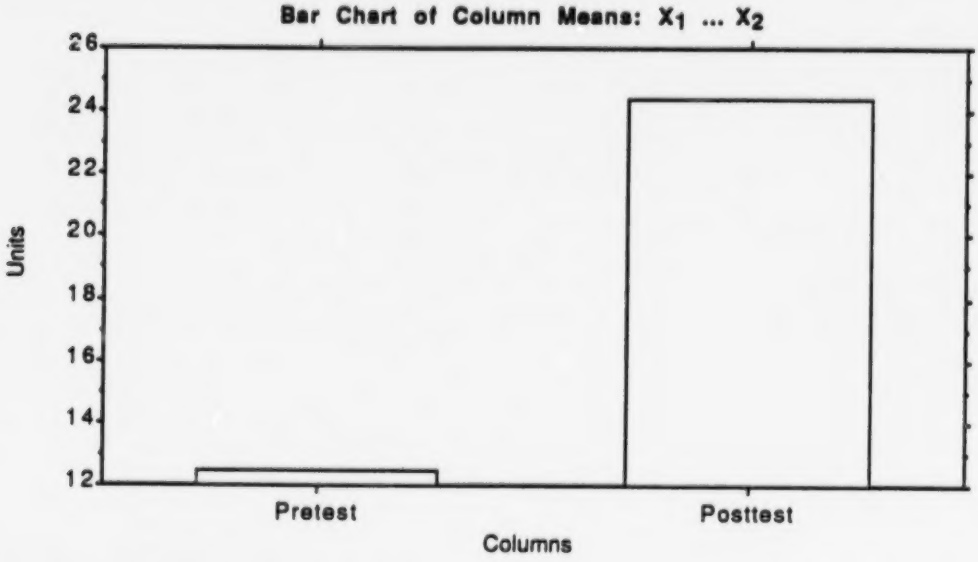
Parameter:	Value:	Std. Err.:	Std. Value:	t-Value:	Probability:
INTERCEPT	2.367				
SLOPE	1.353	.3	.718	4.503	.0002

Confidence Intervals Table

Parameter:	95% Lower:	95% Upper:	90% Lower:	90% Upper:
MEAN (X,Y)	17.321	25.155	18.002	24.474
SLOPE	.724	1.981	.833	1.872

Figure 5-1, below, illustrates the difference between the group mean scores in a bar chart.

Figure 5-1 (N=144)



Pre- and Post Test Results by Item

Question Two: Did the participants improve their scores from pre-to post test on each item?

The scores of each participant for each item of the pre- and post test were compared to determine how many of the participants showed an improvement between pre- and post test on each item of the test. Results presented in Table 5-3 below show that as a group the participants had improved at least slightly on all but Item 5, which measured participants ability to state characteristics of alternate escape routes or to identify the names of the two kinds of escape routes—primary and alternate. As a group the average improvement per item was .57, approximately half a point per item.

Table 5.3
Comparison of Pre- and Post Test Results by Item (N=144)

Item	Module	Maximum Points	Pretest Average	Post Test Average	Difference	Result
1	1	3	1.00	1.11	+.11	Improvement
2	4	5	2.29	3.17	+.88	Improvement
3	1	2	.36	1.01	+.65	Improvement
4	2	2	.73	.93	+.2	Improvement
5	6	2	.49	.39	-.1	Negative Result
6	2	2	.15	1.08	+.93	Improvement
7	2	3	1.43	2.17	+.74	Improvement
8	3	2	.57	.67	+.1	Improvement
9	3	2	.38	.71	+.33	Improvement
10	3	2	.47	1.00	+.53	Improvement
11	3	3	.40	.93	+.53	Improvement
12	4	1	.62	.92	+.3	Improvement
13	4	4	.41	1.55	+1.14	Improvement
14	5	2	.53	1.33	+.8	Improvement
15	5	1	.26	.56	+.3	Improvement
16	5	1	.15	.46	+.31	Improvement
17	5,6	2	.16	.54	+.38	Improvement
18	6	2	.63	1.52	+.89	Improvement
19	6	3	.31	1.28	+.97	Improvement
20	6	3	.69	1.87	+1.18	Improvement
21	2	3	.40	1.15	+.75	Improvement
Total		50	12.43	24.35	+11.92	
Ave.			.59	1.16	+.56	

Individual and Group Improvement by Item

Question Three: *Did the participants improve from pre- to post test on individual items?*

The data were also analyzed by workshop to determine the number of items on which each individual improved from pre- to post test. Results showed that 66 out of 144 participants (46%) had improved on a majority of items (11 or more.) Table 5-4 shows the average number of items on which each participant had improved , stayed the same , or showed a negative improvement for all eight workshops. The average participant improved on ten items, showed no change on nine items, and showed negative improvement on two items.

Table 5-4
Comparison of Performance by Individuals from Pre- to Post Test by Workshop (N=8)

Workshop	N	Average Improved	Average Same	Average With Negative Improvement	Total Number of Items
1	2	8.5	11.0	1.5	21
2	7	9.1	8.4	3.4	21
3	21	10.1	8.0	2.9	21
4	18	8.8	9.2	3.1	21
5	34	11.1	8.1	1.8	21
6	20	9.8	8.6	2.7	21
7	25	10.5	8.0	2.6	21
8	17	8.6	10.1	2.3	21
Total	144	9.93	8.56	2.51	
Average					
%		47%	41%	12%	

Question Four: *Did the form of the test taken (Form A or Form B) affect how the participants improved from pre- to post test?*

Participants in Workshops 1, 4, 6 and 8 took Form A as the pretest and Form B as the post test. Participants in Workshops 2, 3, 5, and 7 took Form B as the pretest and Form A as the post test. An analysis was performed to compare the two groups regarding individual performance on each item from pre- to post test. Table 5-5 presents the findings of that analysis. The AB group improved on an average of 9.1 items. The BA group improved on an average of 10.5 items, 1.4 more items than the AB group.

Table 5.5
Comparison of Performance by Individuals from Pre- to Post Test By Post Test Group (N=144)

Group	Number of Participants	Average Items Improved	Average Items the Same	Average Items Negative Improvement	Total Number of Items
AB	N=57	9.1	9.3	2.6	21
BA	N=87	10.5	8.1	2.4	21
Difference	Mean	+1.4	-1.2	+.2	

Affective Evaluation Results

The participants (after having completed the post test) also completed a Course Evaluation Form (See Appendix A), a Likert-Scale type instrument designed to measure their feelings about the training they had just received. Participants were instructed to circle the response which best described their feelings about a list of 15 statements. On this measurement, 157 participants completed the evaluation.

Results of the Course Evaluation

The results of the analysis presented below in Table 5-6 suggest an overall approval by the participants and a belief that they had gained knowledge of fire safety during the workshop. On the

average, approximately 90 percent of the participants either agreed or strongly agreed with each statement. Since all items were positive statements about the training, that was the desired response. Items 2 and 3 which dealt with identifying fire safety problems and making their facilities safer received the most positive ratings. Item 14 which dealt with the Continuing Education Program received the least positive ratings, with 59% of the participants agreeing or strongly agreeing that the program would be useful to them.

Table 5-6
Participants' Attitudes Towards the Training and Their Learning Experience (N=157)

Items	Strongly Agree	Agree	Un-certain	Disagree	Strongly Disagree	NR*
1. I was motivated to learn more about fire safety by this training session.	43%	47%	3%	2%	1%	4%
2. I am better able to identify and do something about fire safety problems than I was before this training.	48%	48%	1%	1%	1%	1%
3. I have a better understanding of the things I must know about to make my home and clients safer from fire.	51%	47%	1%	0%	1%	0%
4. Issues were raised which caused me to rethink the current fire emergency procedures in my home.	41%	49%	4%	3%	1%	1%
5. I have a better understanding of the special needs and risks of people with developmental disabilities.	39%	54%	2%	2%	2%	1%
6. I have a better understanding of the strengths and limitations of staff.	29%	61%	4%	1%	1%	4%
7. I have a clearer understanding of the licensing requirements for residential care facilities than I did before.	34%	55%	6%	2%	1%	2%
8. I have a better understanding of the things I must do regularly to prevent a fire.	41%	54%	1%	1%	1%	2%
9. I am more aware of the consequences of smoking and other high risk behaviors.	44%	48%	1%	4%	1%	2%
10. I was encouraged to express my thoughts and feelings in this workshop	29%	61%	3%	3%	1%	3%
11. The instructors were well-prepared to conduct this workshop.	44%	45%	5%	4%	0%	2%
12. I will use the Coursebook after the workshop as a fire safety reference.	46%	48%	2%	0%	1%	3%
13. The job aids (checklist) will help me with my fire safety program.	44%	49%	2%	1%	0%	4%
14 The Continuing Education Program will be useful to me and I plan to subscribe.	26%	33%	26%	2%	1%	12%
Averages (rounded)	40%	50%	4%	2%	1%	3%

*NR=No response

Observation Findings

Question Six: *How did the workshops vary from the plan in terms of the time spent on each topic?*

The data presented in Table 5-7 below show that the largest block of time was spent on Module 1, Fire Behavi each workshop on Module 1, which was 12 minutes more than the allotted time. The least amount of time wa the average, three minutes was spent on Module 7 (12 minutes less than the allotted time) and one minute w Education Program (14 minutes less than the allotted time.) Instructors spent 38 minutes on the average tea than the allotted time. Although all but two of the eight workshops started late, all but two ended on time or e

Table 5-7
Time Expenditure at Each Workshop for Training by Module in Minutes (N=8)

WS		ST	PT	I	1	B	2	3	B	4	5	B	6	7	CEP	PT	End
1	6/12	-20	15	22	58	18	46	61	18	38	11	10	35	0	0	30	0
2	6/13	-15	27	24	59	13	0	40	25	28	17	5	54	2	1	ND	ND
3	6/14	-15	25	18	53	10	19	36	24	31	33	0	35	9	5	19	+15
4	6/15	0	50	26	59	20	25	45	15	20	20	0	32	0	0	20	0
5	6/16	-12	22	24	35	15	30	31	41	38	35	0	29	5	0	40	-15
6	6/19	-15	22	25	43	11	39	22	23	30	30	0	40	10	5	45	0
7	6/20	-11	19	30	60	15	35	25	30	30	30	0	30	0	0	ND	ND
8	6/21	0	20	20	52	18	45	15	20	20	15	0	45	0	0	40	-10
T		-88	200	189	419	120	239	275	196	229	191	15	300	26	11	194	-10
M		-11	25	24	52	15	30	34	25	29	24	2	38	3	1	32	-2
AT			30	30	40	5	30	30	15	30	25	5	60	15	15	30	
D			-5	-6	+12	+10	0	+4	+10	-1	-1	-3	-22	-12	-14		

KEY to Table
ST-Starting Time, Numbers indicate how many minutes late the workshop started.
PT–Pretest or Post test
I–Introductory Module, includes showing Need for Fire Safety video
1-7, Module Numbers
B–Break
CEP—Continuing Education Program
End–Numbers indicate how many minutes late the workshop ended
ND–No data were collected by the observer.
M–Mean (Numerical average)
AT— Allotted time
D— Difference between allotted time and time taken

Question Seven: How did the workshops vary from the plan in terms of the coverage of each topic?

Table 5-8
Content Covered by Each Workshop by Module

M.	Workshop 1	Workshop 2	Workshop 3	Workshop 4	Workshop 5	Workshop 6	Workshop 7	Workshop 8
In-tro	All content covered.	All content covered.	All content covered.	All content covered. No data on coverage of resources.	All content covered. No data on coverage of resources.	All content covered.	All content covered. No data on coverage of resources.	All content covered except the resources page.
M. 1	All content covered.	All content covered.	All content covered.	All content covered except page on Smoke.	All content covered except no data on coverage of Fire, Fire Develop-ment.	All content covered except page on Smoke.	All content covered except no data on coverage of Heat Sources of ignition, and common structural Fire Phenomenon.	All content covered except no data on coverage of Smoke.
M. 2	All content covered..	All content covered.	Content covered Intro to F.S., Safe Egress, Vertical Openings, Interior Finishes, Res.. Certifi-cation. Standard, Hazardous Areas, Interior Furnishings F.S. Codes.	All content covered except Intro. to F.S. Codes .	All content covered except, no data for F.S. Codes, Vertical Openings, Safe Egress.	All covered except Safe Egress, Component of a Safe Egress, Interior Finishes, Interior Furnish-ings	All covered except F.S. Codes, Interior Finishes, Interior Furnishings, and no data for Hazardous Areas.	All content covered.
M. 3	All content covered except no data for Commun-ity F.S. Resources.	All covered except Direct Care Staff Chararter-istics Report, Res.. Activities, Cerebral Palsy.	All content covered except Functional Limits in a Fire Emergency.	All content covered except Staff Charater-istics Report, Visually Impaired Functional limits in a Fire Emergency Commun-ity F.S. Resources.	No data for all except Direct Care Staff Character-istics, Functional Limits in a Fire Emergency , Human Behavior in Fires.	All covered except Epilepsy, Autism, Hearing impaired, Visually Impaired Mentally Ill, Elderly, AD, Functional Limits in a Fire Emergency Commun-ity F.S. resources.	All covered except, Staff Character-istics not covered, and no data on Elderly, AD, Functional Limits in a Fire Emergency, Community F.S. Resources.	Content covered : Direct Care Staff Character-istics, Staff Character-istics Report, Res., Activities, Human Behavior in Fires, Commun-ity F.S. resources.

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M. 4	All content covered	All content covered.	All content covered.	All content covered except no data on Electrical Fires and Appliances, Neglect Maintenance, Cleaning Fluids, Fireplaces, Fire Hazard Checklist, Bedtime Checklist.	All content covered except no data for Cooking Fires, Electrical Fires, Hazardous Appliances.	All content covered.	All content covered except no data for Appliances as Fire Hazards, Space Heaters, and Cleaning Fluids was not covered.	All covered except no data for Causes for Fire Death, Fires Caused by Smoking, Tips for Preventing Smoking, Cooking Fires, Electrical Fires.
M. 5	All content covered.	All content covered except Types of Detectors, Smoke Detectors, Other Alarm Systems, Devices for People w/ Visual Impair, Using a Fire Extinguisher Project ID, How to Test a Smoke Detector No data for Devices for Mobility Impair, or Elderly.	All content covered.	All covered except no data for F.S. Devices checklist. Not covered was Devices for Elderly, How to Test a Smoke Detectors.	All covered except no data for Types of Detectors. Not covered was Smoke Detection system, Other Alarm Systems, Devices for Elderly.	No content covered except Types of Detectors.	No data for Devices for Elderly, Emergency Lights, Doors and Barriers, Bedside Safety Devices, Telephone as a F.S. Device, Project ID,How to Test a Smoke Detector. Not covered :Fire Extinguishers, Using a Fire Extinguisher.. Other topics covered.	No data except for F.S. Devices Checklist, Detection Devices.
M. 6	All content covered..	All content covered except Residents Need's Checklist, Fire Report Form.	All content covered.	No data except Assessing Strengths and Weaknesses of Your Home, Res. Needs Checklist, Fire Drill Checklist, Fire Drill Policies.	All content covered.	All covered except Res. Need Checklist.	No data except Resident Needs Checklist, Selecting Prim/Alt. Escape Routes, Emergency Task for Res. Fire Drill Policies, Fire Drill Procedures.	All covered except Improving Fire Safety.
M. 7	No content covered.	No content covered.	All content covered.	No content covered.	No data for all content.	No content covered.	No content covered.	No data for all content.

Field Test Summary

Introduction Module—The Need for Fire Safety

The content from the Introduction Module was tested by Item 1 on the pre- and post test. Results of the data analysis presented in Table 5-8 below show the overall score improvement for Item 1 was positive (+4%), evidence that there was a gain in knowledge concerning the need for fire safety. Item 1 on the Course Evaluation which measured the participants' affective response to the Introduction Module suggests that participants felt that they were motivated by the training to learn more about fire safety. Ninety percent of the participants either agreed or strongly agreed with that item.

Table 5-9
An Analysis of Pre- and Post Test Results for the Introduction Module

Item	N	Content	Poss. Point	Ave Score Pre test	Ave Score Post Test	% on Pre test	% on Post Test	Result
1	144	The Need for Fire Safety	3	1.00	1.11	33%	37%	+4%

Module One—Fire Behavior

The content from Module One was tested by Item 3 on the pre- and post test. The results , suggest an overall gain in knowledge on the item concerning fire behavior. There was no Course Evaluation item to measure the participants' affective response concerning fire behavior.

Table 5.10
An Analysis of Pre- and Post Test Results for Module One

Item	N	Content	Poss. Point	Ave Score Pre test	Ave Score Post Test	% on Pre test	% on Post Test	Result
3	144	Fire Behavior	2	.36	1.01	18%	51%	+33%

Module Two–Life Safety Standards

The content from Module Two was tested by Items 4, 6, 7, and 21 on the pre- and post test. The overall results for Module Two suggests that the participants gained in knowledge concerning Life Safety Standards. Item 6 concerning vertical openings showed the largest gain (+47%). Item 4, which dealt with interior finishes, showed the least gain score (+10%).Participants also showed improvement on Item 21 (components of a safe egress), with a gain in score of +25% and Item 7 (code requirements and hazardous areas) with a gain score of +24%.
Participants' affective response to the information in Module Two was measured by Items 2 and 7 on the Course Evaluation. Over 96% of the participants either agreed or strongly agreed with Item 2 concerning identifying and correcting fire safety problems. Over 89% of the participants either agreed or strongly agreed, Item 7 which stated that participants had a clearer understanding of the licensing requirements for residential care facilities.

Table 5-11
An Analysis of Pre- and Post Test Results for Module Two

Item	N	Content	Poss. Point	Ave Score Pretest	Ave Score Post Test	% on Pretest	% on Post Test	Result
4	144	Interior Finishes	2	.73	.93	37%	47%	+10%
6	144	Vertical Openings	2	.15	1.08	7%	54%	+47%
7	144	Code Requirements and Hazardous Areas	3	1.43	2.14	48%	72%	+24%
21	144	Components of a Safe Egress	3	.40	1.15	13%	38%	+25%

Module Three-Human Factors in Fire Safety

The content from Module Three was tested by Items 8, 9, 10, and 11. The overall result (positive improvement on every item) suggests that the participants gained in knowledge concerning Human Factors in Fire Safety. Items 10 and 11 showed the largest improvement in score, +26 % on Item 10 and +18% on Item 11.

Characteristics of direct care staff and resident activities that impact on fire safety (Item 8) showed the least improvement (+5%) from pre- to post test. Item 9, which dealt with characteristics of people with developmental disabilities showed an improvement in score of +17% from pre- to post test.

Items 5 and 6 on the Course Evaluation measured the participants' affective responses to Module Two. Response to these items showed that 93% of the participants either agreed or strongly agreed that they had a better understanding of the special needs and risks of people with developmental disabilities; 90% of the participants agreed they had a better understanding of the strengths and limitations of staff.

Table 5-12
An Analysis of Pre- and Post Test Results for Module Three

Item	N	Content	Poss. Point	Ave Score Pre test	Ave Score Post Test	% on Pretest	% on Post Test	Result
8	144	Characteristics of Staff and Residents	2	.57	.67	29%	34%	+5%
9	144	Characteristics of People with Developmental Disabilities	2	.38	.71	19%	36%	+17%
10	144	Physical Limitations and Community Resources	2	.47	1.0	24%	50%	+26%
11	144	Human Behavior in Fires	3	.40	.93	13%	31%	+18%

Module Four–Fire Hazards

The content in Module Four was tested by Items 2, 12, and 13. Participants showed the largest gain in score (+30%) on Item 12, which dealt with the risk of electrical and appliance fires. Item 13, which dealt with the risk of cooking and smoking fires also showed a large gain in score (+29%). Participants showed the least gain in score (+17%) on Item 2, which dealt with the components of monthly and bedtime fire safety inspections.

Item 10 on the Course Evaluation measured participants' affective responses to Fire Hazards. Responses to this item showed that 92% of the participants either agreed or strongly agreed that they had a clearer understanding of the hazards of smoking and other high risk behaviors.

Table 5-13
An Analysis of Pre- and Post Test Results for Module Four

Item	N	Content	Poss. Point	Ave Score Pretest	Ave Score Post Test	% on Pre test	% on Post Test	Result
2	144	Fire Safety Inspections	5	2.29	3.17	46%	63%	+17%
12	144	Risk of Appliance and Electrical Fires	1	.62	.92	62%	92%	+30%
13	144	Risk of Cooking and Smoking Fires	4	.41	1.55	10%	39%	+29%

Module Five–Fire Safety Devices

Knowledge about fire safety devices was measured on the pre- and post test by Items 14 through 16. Item 14 concerning smoke detectors showed the largest improvement in score (+40%). Item 16, which dealt with sprinkler systems, showed an improvement in score of +31%. The least improvement in score (+30%) was shown on Item 15 dealing with fire extinguishers.

There were no items to measure the affective response of participants to Module Five. However, at the end of Module Five, in five of the eight workshops, Quick Draw was played, a game which involved participants drawing fire safety devices on the chalkboard while other participants guessed what the items were.

Table 5-14
An Analysis of Pre- and Post Test Results for Module Five

Item	N	Content	Poss. Point	Ave Score Pretest	Ave Score Post Test	% on Pre test	% on Post Test	Result
14	144	Smoke Detectors and Alarms	2	.53	1.33	27%	67%	+40%
15	144	When to use a fire extinguisher	1	.26	.56	26%	56%	+30%
16	144	Knowledge of sprinkler systems	1	.15	.46	15%	46%	+31%

Module Six–Fire Emergency Planning

Items 5, 17, 18, 19 and 20 dealt with topics related to fire emergency planning. Participants showed positive improvement on Items 17, 18, 19 and 20. Item 18 showed the largest improvement in score (+44%). Item 20 showed an improvement of +39%, Item 19 showed an improvement of +33%, and Item 17 showed an improvement of +19%.
Negative results (-5%) were shown on Item 5, which dealt with the criteria for choosing alternate escape routes and the number of escape routes required from each bedroom.

Affective responses to Module Six were measured by Items 2 and 4 on the Course Evaluation. Responses to these items showed that 96% of the participants either agreed or strongly agreed that they were better able to identify and do something about fire safety problems than before the training; 90% of the participants either agreed or strongly agreed that issues were raised which caused them to re-think the current emergency procedures in their home.

Table 5-15
An Analysis of Pre- and Post Test Results for Module Six

Item	N	Content	Poss. Point	Ave Score Pre test	Ave Score Post Test	% on Pretest	% on Post Test	Result
5	144	Alternate Escape Routes	2	.49	.39	25%	20%	-5%
17	144	Fire Ladders and Primary Escape Routes	2	.16	.54	8%	27%	+19%
18	144	Emergency tasks for staff and resident	2	.63	1.52	32%	76%	+44%
19	144	Frequency and types of fire drills	3	.31	1.28	10%	43%	+33%
20	144	Ways to improve fire safety	3	.69	1.87	23%	62%	+39%

Module Seven— Staff and Resident Training

No data were collected about participant content regarding the learning in Module Seven

Chapter 6

Follow-Up Workshop Results

Introduction

Following the analysis of the data from the Instructor's Workshop and field test of the Provider's Workshops, members of the project's Advisory Council met on June 25, 1989 to discuss the results of the evaluation including their own observations. All but one member of the Advisory Council had either taught portions of the Instructor's Workshop, observed one or more of the Provider's Workshops, or taught one or more sessions of the Provider's Workshop. Results were collated regarding the presentation by instructors and other aspects of the workshop from all of the data sources, presented to the Council, and discussed. A set of preliminary recommendations were developed. To test whether those recommendations would have an important impact on the workshop outcomes as measured by the post test, BWA conducted another workshop on Saturday, August 5, 1989 using one BWA staff member and a member of the Focus Group who had completed the Instructor's Workshop on June 5 and 6, 1989.

Specific recommendations that the BWA trainers were expected to implement were:

- The number of participants should be limited to 25.
- Participants should be allowed to use the coursebook to complete the post test.
- The instructions in the Instructor's Manual should be followed more closely.
- Participant interaction should be encouraged. Activities in the coursebook which ask for participants to write in the book should be emphasized.

Setting

The Follow-Up Workshop took place at the Reisterstown Road Library on Saturday, August 5, 1989. The training took place in a conference room equipped with tables, chairs, a television, a videotape player, an audiocassette player, and a chalkboard.

Sample

Twenty-five Project Home care providers participated in the Follow-Up Workshop. Of those, twenty-one people completed the pre- and post test, two others completed the pretest and no post test, and two did not complete either the pre- or post test. Twenty-one participants completed the Provider's Survey and eighteen completed the Course Evaluation.

Figure 6-1
Follow-Up Workshop Participants

Number completing pre-and post test	21
Number completing pretest and no post test	2
Number who attended but completed no tests	2
Total number attending	25

A preregistration form was completed by 24 participants. Of those participants, 92% operated out of private residential homes. Over 67% of the participants worked with people with mental illness

and 42% had worked with people with disabilities for between one and five years. Approximately 38% of the participants had had special training in nutrition and medications. Over 54% had completed high school, 13% had completed a bachelor's degree, and 13% had completed a master's degree. The remaining 20 % had completed less than a high school education. Previous fire safety training had been administered to 38% of the participants, and 46% had never trained their clients in fire safety procedures. Over 67% had never experienced a fire emergency.

Data Collection and Analysis

Participants completed a preregistration form, Form A as a pretest, Form B as a post test, a course evaluation, and a provider's survey. Pre- and post tests were scored using the identical procedures used in the field test. Data were collected from the course evaluation and provider's survey forms. The twenty-one participants that completed a pre- and a post test were included in the data analysis. Pre- and post tests were scored using the standardized answer key which listed all acceptable responses to the open-ended items. Each participant was assigned a number and the results of their tests were tabulated for their total score and by item. Total scores and scores on each item were compared from pre- to post test.

Findings

Pre-and Post Test Results

Question One: *Did the participants improve from pre- to post test?*

For the 21 board and care providers attending the Follow-Up workshop, the mean score on the post test was 13.9 (28%) and the mean score on the post test was 21.2 (42.5%), a mean gain of 7.3 (10.6%) points. Complete results of the analysis for pre- and post tests are presented below in Table 6-1.

Table 6-1
Presentation of Follow-Up Providers' Descriptive Data for the Pretest and Post Test (N=21)

X_1: Pretest

Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
13.952	6.383	1.393	40.748	45.751	21
Minimum:	**Maximum:**	**Range:**	**Sum:**	**Sum Squared:**	**# Missing:**
3	27	24	293	4903	0

X_2: Post Test

Mean:	Std. Dev.:	Std. Error:	Variance:	Coef. Var.:	Count:
21.238	12.016	2.622	144.39	56.579	21
Minimum:	**Maximum:**	**Range:**	**Sum:**	**Sum Squared:**	**# Missing:**
3	43	40	446	12360	0

A simple regression analysis was performed to determine whether the mean group gain of approximately 10 percentage points from pre- to post test was statistically significant. The results shown in Table 6-2 below show that gain was significant at the probability level of .0002.

Table 6-2
Regression Analysis for Pre- to Post Test Results (N=21)

Simple Regression X_1: Pretest Y_1: Post Test

DF:	R:	R-squared:	Adj. R-squared:	Std. Error:
20	.718	.516	.491	8.575

Analysis of Variance Table

Source	DF:	Sum Squares:	Mean Square:	F-test:
REGRESSION	1	1490.797	1490.797	20.276
RESIDUAL	19	1397.012	73.527	p = .0002
TOTAL	20	2887.81		

No Residual Statistics Computed

Simple Regression X_1: Pretest Y_1: Post Test

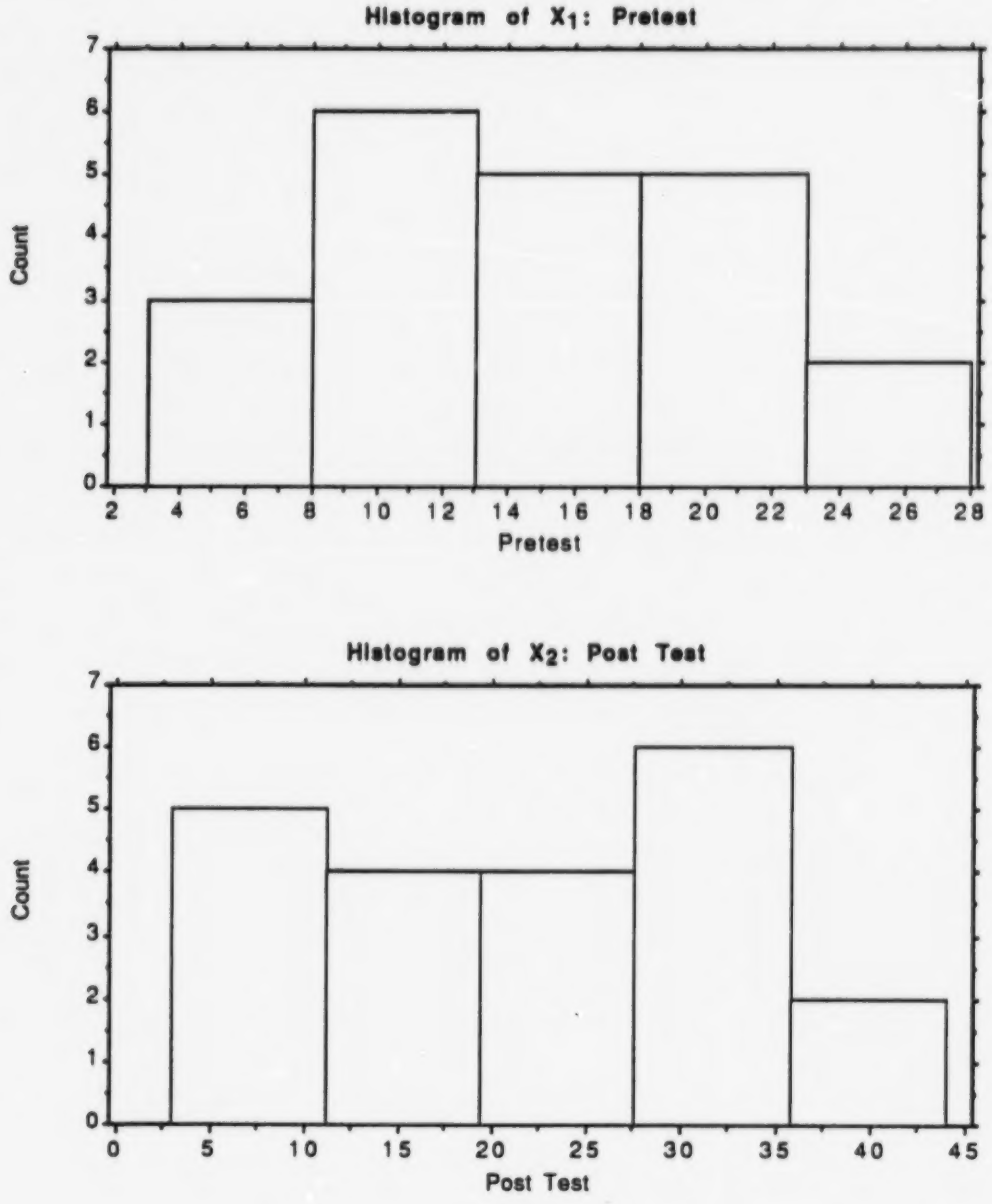
Beta Coefficient Table

Parameter:	Value:	Std. Err.:	Std. Value:	t-Value:	Probability:
INTERCEPT	2.367				
SLOPE	1.353	.3	.718	4.503	.0002

Confidence Intervals Table

Parameter:	95% Lower:	95% Upper:	90% Lower:	90% Upper:
MEAN (X,Y)	17.321	25.155	18.002	24.474
SLOPE	.724	1.981	.833	1.872

Figure 6-2
Histogram of Pretest and Post Test Results (N=21)



Course Evaluation Results

Question Two: *Did the participants have positive feelings about the workshop and their learning experience?*

The results of the analysis presented below in Table 6-3 suggest an overall approval of the participants of the workshop. Over 87% of the participants either agreed or strongly agreed with each positive statement about the workshop. Items 11 and 12 received the most positive ratings, with 100% of the participants either agreeing or strongly agreeing with those items. Item 11 dealt with

the preparation of the instructors, while Item 12 dealt with using the Coursebook as a reference after the workshop. Item 14, which dealt with the Continuing Education Program, received the least positive rating, with 61% of the participants either agreeing or strongly agreeing with that item.

Table 6-3
Participants' Attitudes Towards the Training and Their Learning Experience (N=16)

Items	Strongly Agree	Agree	Un-certain	Disagree	Strongly Disagree	NR
1. I was motivated to learn more about fire safety by this training session.	56%	22%	0%	16%	0%	6%
2. I am better able to identify and do something about fire safety problems than I was before this training.	50%	50%	0%	0%	0%	0%
3. I have a better understanding of the things I must know about to make my home and clients safer from fire.	44%	56%	0%	0%	0%	0%
4. Issues were raised which caused me to rethink the current fire emergency procedures in my home.	44%	44%	0%	11%	0%	0%
5. I have a better understanding of the special needs and risks of people with developmental disabilities.	22%	61%	0%	16%	0%	0%
6. I have a better understanding of the strengths and limitations of staff.	28%	50%	0%	11%	0%	11%
7. I have a clearer understanding of the licensing requirements for residential care facilities than I did before.	39%	44%	6%	6%	0%	6%
8. I have a better understanding of the things I must do regularly to prevent a fire.	33%	61%	0%	6%	0%	0%
9. I am more aware of the consequences of smoking and other high risk behaviors.	44%	39%	0%	16%	0%	0%
10. I was encouraged to express my thoughts and feelings in this workshop.	39%	50%	0%	6%	0%	6%
11. The instructors were well-prepared to conduct this workshop.	56%	44%	0%	0%	0%	0%
12. I will use the Coursebook after the workshop as a fire safety reference.	56%	44%	0%	0%	0%	0%
13. The job aids (checklist) will help me with my fire safety program.	44%	39%	6%	0%	0%	11%
14. The Continuing Education Program will be useful to me and I plan to subscribe.	22%	39%	11%	11%	0%	16%
Averages (rounded)	41%	46 %	2%	7%	0%	4%

Question Three: How did the workshop vary from the plan in terms of time spent on each topic?

Instructors arrived 22 minutes late. However, the Project Home Director had already started showing the video, The Need for Fire Safety. Participants took the Pretest after they had seen the video. For the rest of the workshop, the time taken did not substantially deviate from the time allotted. (See Table 6-4 below.)

Table 6-4
Time Expenditure for Follow-Up Workshop by Module in Minutes

Module	Time Allotted	Time Used	Difference
Introduction to Participants Workshop	30	20	-10
Module 1, The Need for Fire Safety	30	ND	—
Module 2, Fire Behavior	40	33	-7
5 minute break	5	20	+15
Module 3, Life Safety Standards	30	17	-13
Module 4, Human Factors in Fire Safety	30	28	-2
Break	15	25	+10
Module 5, Fire Hazards	30	35	+5
Module 6, Fire Safety Devices	25	30	+5
5 minute break	5	0	-5
Module 7, Fire Emergency Planning	60	60	0
Module 8, Staff and Resident Training	15	5	-10
Continuing Education Program	15	5	-10
Post Test/ Course Evaluation	30	40	+10

Question Four: *How did the participants' performance in the Follow-Up Workshop compare with the performance of the participants in the Field Test Workshops?*

A comparison of gain between Field Test participants and Follow-Up Workshop participants showed that overall Field Test participants had improved about 5% more. Follow-Up participants, however had a slightly higher post test average.

Table 6-5
A Comparison of Pre-Post Test Results Among Field Test, Follow-up, and Instructor Groups

Group	N	Pretest	SD	Percentage	Post Test	Percentage	Difference	SD
Field Test	144	12.4	6.44	24.8%	24.3	48.6%	33.8%	8.96
Follow-up	19	16.7	6.38	33.7%	25.4	50.8%	17.5%	12.02
Instructors	18	19.75	5.36	39.5%	38.6	77.2%	18.8	3.263

Table 6-6
A Comparison of Pre and Post Test Results Among Individual Workshops (N=9)

Workshop	N	Pretest	Percentage	Post Test	Percentage	Difference
1	2	5.5	11%	13	26%	15%
2	7	18	36%	28.4	56.8%	20.8%
3	21	16	32%	27.9	55.8%	27.9%
4	18	13.3	26.6%	21.6	43.2%	16.6%
5	34	8.8	17.6%	24.3	48.6%	31%
6	20	13.4	26.8%	24.3	48.6%	21.8%
7	25	13.6	27.2%	26.6	53.2%	26%
8	17	10.2	20.4%	19.3	38.6%	18.2%
9*	19	16.7	33.7%	25.4	50.8%	17.1%
Total	163	115.5		210.8		
Average	163	12.9	25.8%	23.4	46.8%	21.6%

* Follow-Up Workshop

Chapter 7

Results of the Follow-Up Instructors Survey

During the field test of the provider's workshops, eight workshops were conducted by 12 of the 18 individuals who had participated in the June 5 and 6, 1989 instructors workshop. To assess their perceptions, a survey was sent asking for information about their experience and their assessment of the training and the materials. (See Appendix G.) Results of that survey are presented below.

Question One: *How would you improve the Instructor's Workshop?*

The Instructor's Workshop was held during a two day period. The agenda followed the same sequence as the Participant's Coursebook with the addition of enrichment activities. Suggestions from respondents regarding improving the workshop included:

- Provide opportunities to practice teaching the material.
- Expand Workshop to 3 days.
- Allow more time for discussion and questions.

Question Two: *How did the instructors perceive their own knowledge of the information they were presenting during the workshop?*

All of the respondents (N=5) felt very comfortable regarding their knowledge of developmental disabilities. All but one was comfortable with their knowledge of fire safety and questioned their preparation regarding licensing certification standards. Respondents felt most comfortable teaching the module on fire hazards, and least comfortable teaching about fire behavior and fire emergency planning.

Question Three: *Which modules did instructors feel prepared to teach?*

Respondents (N=5) felt most prepared to teach the module on fire hazards and least prepared to teach the modules on fire behavior and fire emergency planning. Only one of the respondents felt unprepared to teach any of the modules.

Table 7-1
Modules in Order of Teaching Comfort of Instructors (N=5)

Module	Completely	Somewhat	Not Prepared
Fire Hazards	80%	10%	0%
Introduction	60%	40%	0%
Life Safety Standards	60%	40%	0%
Human Factors	60%	40%	0%
Fire Safety Devices	60%	40%	0%
Resident and Staff Training	40%	60%	0%
Fire Behavior	40%	40%	20%
Fire Emergency Planning	20%	80%	0%

Question Four: *How would you improve the Instructor's Manual?*

The Instructor's Manual had been 3-hole punched and placed in a 3 ring binder. The materials consisted of approximately 20 "pink pages," materials that explained the purpose of each module, with suggestions for introducing each one, answer keys for some of the activities in the coursebook, and additional technical information. The Manual also included annotated pages of all of the activity pages of the Coursebook. The Coursebook materials were reduced. At the top of each page were the activity objective and instructions for presenting the activity. In the right margin were Key Points and Interesting Facts.

Of the respondents (N=5), all strongly approved (80%) or approved (20%) of the format used to publish the Instructor's Manual including the two color format, the annotations, used to publish the Manual. Overall, they found the Manual easy to follow and teach from. Although all of the respondents approved of the print size, their enthusiasm was less with 20% strongly approving, and 80% approving. Respondents had no suggestions for improving or changing the format or the content of the Instructor's Manual.

Question Five: *Which training aids were used and how did participants respond?*

All of the respondents (N=5) used all five of the training aids. Table 7-2 below presents the instructors' evaluation of training aids from most to least preferred. Of the training aids, the Human Behavior in Fires, audiocassette was least preferred.

Table 7-2
Instructor's Evaluation of Training Aids After Conducting Workshops (N=5)

Training Aid	Used	Very Good	Good	Fair	Poor	NR
1. Flashover: Point of No Return	100%	40%	40%	0%	0%	20%
2. Participant's Coursebook	100%	40%	40%	0%	0%	20%
3. Need for Fire Safety (video)	100%	40%	40%	0%	0%	20%
4. Job Aids (Checklists)	100%	20%	60%	0%	0%	20%
5. Human Behavior in Fires (audiocassette)	100%	0%	20%	40%	0%	40%

Question Six: What additional training aids did the instructors want?

Instructors were asked if they needed any additional training aids. They were given choices of overhead transparencies of job aids, additional audiocassettes, and additional videos. Space was provided for them to add their own suggestions. Some of the respondents thought that additional aids were not needed and that they would not have time to use any additional materials. Other respondents said they would like overhead transparencies (N=1), and additional videos (N=2). Other suggestions were fire safety posters, videos demonstrating escape routes and stop, drop, and roll.

Question Seven: *Did the instructors use a flipchart or chalkboard as a training tool?*

All of the respondents reported using either a flipchart, a chalkboard, or both as training tools. Of the respondents (N=5), 40% used a flipchart, 20% used a chalkboard, 40% used both.

Question Eight: *Did the instructors use the games and how did participants respond to them?*

Instructions and materials were provided for instructors to conduct two games during the workshop: Charades and Quickdraw. In both cases fire safety devices and terms were used as the content for the games.

Of the respondents (N=5), 40% used both Quickdraw and Charades, 20% used only Quickdraw, and 40% used neither. Instructors reported that participants were hesitant at first but eventually enjoyed playing the games. Instructors cited lack of time as the reason for not using both or either game. When asked if they would use the game in the future, 80% said yes if time permitted.

Question Nine: *How could the Participant's Coursebook be improved?*

All of the respondents (N=5) preferred a permanent binding rather than the 3 hole punch, shrink wrapped format used in the field test. They also suggested numbering pages consecutively throughout the book. One suggested that the fire safety floor plans should be expanded, and one person suggested that the pictures in Module 2, at the bottom of page 5 on safe egresses be explained.

Question Ten: *How did the instructors feel about their teaching experience?*

All of the respondents (N=5) felt that they would find teaching the workshop easier the next time. Only 40% said they were willing to conduct workshops other than for Project Home providers; the remaining 60% were uncertain.

Question Eleven: *How did instructors perceive the interest and learning of the participants?*

All of the respondents (N=5) felt sure that the participants were interested in fire safety and learned a great deal during the workshop.

Question Twelve: *How did the instructors perceive their own knowledge of the information they were presenting during the workshop?*

All of the respondents (N=5) felt very comfortable regarding their knowledge of developmental disabilities. All but one was comfortable with their knowledge of fire safety and questioned their preparation regarding licensing certification standards. Respondents felt most comfortable teaching the module on fire hazards, and least comfortable teaching about fire behavior and fire emergency planning.

Question Thirteen: *How did instructors judge the facilities where workshops took place?*

Respondents were divided on this issue; two of them were dissatisfied and two were satisfied. Problems cited were: noisy air conditioning, room too large, room too small, no tables for participants to write on.

Question Fourteen: *Did participants ask any questions that instructors could not answer?*

Only one question: "Why are fire extinguishers required if BWA recommends not using them?" was reported by respondents (N=5).

Question Fifteen: *What ideas did instructors have about improving the workshop for providers?*

Respondents (N=5) consistently felt there was too much to be covered during the time allotted and suggested holding the workshop over a two day period. No respondent suggested reducing the scope of the workshop or eliminating information from the coursebook. Participants in the field test were given only short breaks and no lunch hour. Respondents suggested lengthening the workshop time and including longer breaks and an hour for lunch. Respondents also suggested reducing the time required to administer the post test.

Question Sixteen: *Have any providers asked to use training aids?*

In order to implement Module 7, Resident and Staff Training, workshop participants need to borrow audiovisual training aids from the certified instructors. Respondents reported that none of the providers to date (approximately 6 to 8 weeks after the workshop) had asked to borrow materials.

Question Seventeen: *Were the instructors planning to subscribe to the Continuing Education Program?*

Of the respondents (N=5), only two planned to subscribe to the CEP. The remaining instructors cited lack of funds, and uncertainty about the opportunities to use the materials.

Chapter 8

Summary of Findings, Problems, and Recommendations

Purpose of the Study

The purposes of this study were:

1. To develop a program for training instructors who could effectively present the Fire Safety Workshop for Board and Care Operators and Staff and to pilot test that program. The program included a two day workshop. The materials included an agenda and program for the workshop, a set of evaluation materials, an instructor's manual and other items previously developed for the Fire Safety Workshop.
2. To field test the one day Fire Safety Workshop for Board and Care providers using the instructors who had completed the pilot test of the Instructor's Workshop.

Instructor's Workshop

Data sources

Preregistration forms, pre- and post tests, course evaluation, materials evaluation, follow-up instructor's survey, transcript of video recording of workshop, observations of staff at the workshops,

Summary of Findings

1. Did the participants improve from pre- to post test individually and as a group?

Participants (N=16) in the Instructor's Workshop improved their mean score as a group from approximately 40% to 77%. The gain of 37 percentage points was statistically significant at greater than the .05 level of confidence.

2. Did a majority of the participants improve on a majority of the items?

Participants' performance on the 21 test items (each drawn from the same content domain) improved from pre- to post on all but three items.

Item 8 on the pretest asked participants to name resident activities that might impact on fire safety. The post test item asked them to list characteristics of staff that might impact on fire safety. Participants generally could answer the question about residents, before the workshop; but could not identify staff characteristics at the conclusion of the workshop.

Item 9 on the pretest asked participants to name two resident characteristics that would impact on fire safety. Most participants were able to identify at least one correct answer. On the post test the participants were asked to identify two characteristics of residents with mental disabilities that might impact on fire safety. The majority of participants were unable to respond with even one correct answer.

Finally, Item 12 of the pretest asked participants how to reduce the risk of electrical fires. All but one person was able to respond with a correct answer. Item 12 on the post test asked how to reduce the risk of appliance fires. Only one participant was able to answer Item 12 correctly.

Responds to Items 1 and 3, testing knowledge of Module One, Fire Behavior, the topic that participants felt least comfortable teaching, indicates that participants actually improved their knowledge on content draw from that domain.

Responses to Items 5, 17, 18, 19, and 20, testing knowledge of Module Six, Fire Emergency Planning, also indicates that participants were prepared to teach that content even though they felt less comfortable teaching this module than others.

3. Did the participants improve from pre- to post test on individual items?

A majority of the participants (15 of 16) showed improvement on a majority of the items (11 or more). On the average participants improved or stayed the same on 19 of the 21 items.

4. Did the participants have positive feelings about the workshop and their learning experience?

A large majority of participants (86%) agreed or agreed strongly with each statement about the workshop. Statements which received the least positive responses related to participants having a clear idea of how to present the workshop and an understanding of licensing and certification standards.

5. Did the participants feel the training aids were useful in helping present the Workshop?

Overall, 69% of the participants rated the training aids either excellent or good. Generally, they strongly approved of the videotapes Flashover: Countdown to Disaster and Flashover: Point of No Return. They gave the video "Need for Fire Safety" a strong approval with 76% rating it excellent or very good. The audiocassette "Human Behavior in Fire" was rated excellent or good by 59% of the group and average by 29%. The videos "Silent Response" and "Everybody Needs a Buddy" were acceptable to most of the participants. The film "Know Your Fire Extinguisher" received the least positive ratings. Participants cited its out-of-date information as the reason for their poor rating.

6. How did the workshop training vary from the plan in terms of time spent on each topic?

Because the workshop started late on the first day and the time used to present Module One, Fire Behavior, exceeded the allotted time, all of the other modules taught during Day One were given less time that had been allotted. During Day Two, the 33 additional minutes spent on Module 4, Fire Hazards, reduced the time planned for the other modules.

7. How did the scope of the content vary from the planned presentation?

The content did not deviate markedly from the information in the Coursebook and Instructor's Manual. Issues brought up that were not in the planned scope were: arson, legal liability, woodstoves, techniques firefighters use to fight fires, summarizes of Chapters 17, 20, and 21 of the NFPA Life Safety Codes, frying foods as a fire hazards, insulation of fireplace chimneys, deadbolts, location of smoke detectors (wall, ceiling), advantages of hard-wired smoke detectors versus battery-operated detectors, gas leaks. Nearly all of these diversions were in response to questions from the participants.

Follow-Up Instructors Survey

Data Sources

Data were gathered from survey forms sent to each instructor who completed a workshop.

Summary of Findings

1. Instructors asked for opportunities during the Workshop to practice teaching the materials and more time for discussion and questions. One respondent suggested expanding the workshop to 3 days.

2. Overall instructors felt comfortable regarding their knowledge of the information they had to teach and with the skills they were expected to have. They felt most comfortable with the module on fire hazards and the least comfortable teaching fire emergency planning.

3. Respondents generally strongly approved of the Instructor's Manual format and information. They found it easy to follow and teach from.

4. Respondents used all of the training aids. They strongly approved of the videos "Flashover: Point of No Return," and "The Need for Fire Safety" as teaching aids. They also strongly approved of the Coursebook. They approved less strongly of the Job Aids and generally were unenthusiastic about the audiocassette "Human Behavior in Fires."

5. Additional training aids suggested by instructors included additional videos about fire drills and stop, drop, and roll, and fire safety posters. One respondent wanted overhead transparencies of job aids.

6. All of the instructors responding to the survey used either a flip chart, a chalkboard or both as training tools.

7. The games developed for the workshop were used by 60% of the respondents. Those who did not use them cited time as the reason.

8. All of the respondents preferred a permanent binding, rather than the 3 hole punch loose leaf format used in the field test. They suggested numbering pages consecutively rather than by module.

9. Overall, instructors believed that they would find teaching the workshop easier the next time. Of those responding, 40% were willing to teach the workshop to providers other than for Project Home.

10. All of the respondents believed that participants were interested in fire safety and learned during the workshop.

11. Overall, the respondents were comfortable regarding their knowledge of topics covered by the workshop. They felt most comfortable teaching about fire hazards and least comfortable teaching about fire behavior and fire emergency planning.

Provider's Workshop

Data sources

Preregistration forms, pre- and post tests, course evaluation, materials evaluation, observations of staff at the workshops.

Summary of Findings

1. Did the participants, as a group, improve from pre- to post test?

Participants' mean score improved an average of 12 points or 24% from pre- to post test. This difference was statistically significant at a greater than an .05 level of confidence.

2. Did the participants improve their scores from pre- to post test on each item?

As a group, the participants improved at least slightly on all but Item 5 which tested the participants knowledge about alternate escape routes. As a group, they approved an average of .57 points per item.

3. Did the participants improve from pre- to post test on individual items?

Results showed that 46% of the participants had improved on a majority of items (11 or more). As a group, the participants improved on approximately 10 items, stayed the same on 8.5 items and received lower post test scores on 2.5 items. Those who took Form B as a pretest and Form A as a post test performed slightly better, improving on 1.4 more items than the AB Group.

2. Did the participants have positive feelings about the workshop and their learning experience?

Results suggest a strong approval by participants and a believe that they had gained knowledge of fire safety. Approximately 90% of the participants either agreed or strongly agreed with each statement about the training. Items 2 and 3 which dealt with identifying fire safety problems and making their facilities safer received the most positive ratings. Item 14 which dealt with the Continuing Education Program received the least positive ratings, with 59% of the participants agreeing or strongly agreeing that the program would be useful to them.

6. How did the workshops vary from the plan in terms of the time spent on each topic?

Information gathered by observers at each workshop showed that the largest block of time was spent on Module 1, Fire Behavior. Participants took longer amounts of time for breaks than had been planned. Instructors also spent more time on Module 2, Life Safety Standards, than had been planned. All of the other modules were given less time than had been planned with the greatest difference for Module 6, Fire Emergency Planning.

7. Did the participants show improvement on each module?

Participants as a group showed positive improvement on all modules. The module with the most improvement overall was Module 5, Fire Safety Devices. Items on which they showed the greatest improvement (in order) those that measured their knowledge about : vertical openings, emergency tasks for residents, smoke detectors, fire drills, and fire behavior. The topic on which they performed the worse was included in Module 6 and measured knowledge about alternate escape routes.

Provider's Follow-Up Workshop

Data Sources

Data were collected from preregistration, pre- and post tests, course evaluation, provider's survey forms, and observations from a BWA staff member.

Summary of Findings

1. Did the participants improve from pre- to post test?

Participants improved an average of 10.6% from pre- to post test. The difference was statistically significant beyond the .05 level of confidence.

2. Did the participants have positive feelings about the workshop and their learning experience?

Over 87% of the participants either agreed or strongly agreed with each positive statement about the workshop and their learning experience. They strongly approved of the instructors and the Coursebook.

3. How did the participants' performance in the Follow-Up Workshop compare with the performance of the participants in the Field Test Workshops?

Although the average post test score for participants in the follow-up group was higher than for the field test group, the gain score was less due to the higher pretest scores of the group. Participants in the follow-up group viewed the video "The Need for Fire Safety" before taking the pretest which may have affected that outcome.

Chapter 9

Recommendations for the Instructor's Workshop

Introduction

The pilot test of the Instructor's Workshop took place over a two day period. The format consisted of a presentation of the Provider's Workshop by four different instructors, each of whom were experts in the specific content area of the modules they presented. Interspersed with the fire safety modules were presentations about training techniques and other information instructor's needed to present the workshop such as administering the evaluation instruments, using training aids. Participants in this workshop viewed all of the training aids designed for the Provider's Workshop plus two 16mm films and two additional videotapes.

Procedures

Information from all sources was collated and analyzed for overall approval or disapproval of the workshop. Data included information collected before and after the workshop and after participants had presented one or more sessions of the workshop to providers.

Problems Identified

1. The average post test score of the participants in the instructor's workshop was 77%. This score, if it is a reliable measure of their learning, needs to be improved.

2. Participants, after having conducted a workshop, suggested adding opportunities to practice presenting the materials before actually conducting a workshop with providers.

3. Participants wanted workshop instructors to model more closely the manner in which the workshop should be taught to providers.

Recommendations

1. Revise the agenda (format) of the Instructor's Workshop to include:
   - Day 1: Present the Workshop in the same time frame and with the same training aids in the same manner as the instructors are expected to present it to providers.
   - Evening: Conduct an optional evening session to provide participants an opportunity to practice teaching parts of the Workshop with assistance from Certified Instructors. Videotape instructors.
   - Day 2: Conduct enrichment activities regarding: fire safety, board and care operations,needs and characteristics of people with development disabilities, training techniques, working with adults, and administrative tasks associated with presenting the workshop (e.g., administering tests).

2. Videotape a model session of the Provider's Workshop (possibly videotape Day 1 of the Instructor's Workshop) and make copies of this tape available to instructors.

3. Send participants a copy of the Provider's Workshop Coursebook in advance of the workshop along with other materials that they need to become familiar with.

4. Go over results of the pretest and be sure to answer any questions participants have about the content of the course prior to the administration of the post test.

(Whenever civil)

5. Establish a criteria for passing the post test. Participants who are unable to demonstrate mastery of the content should not present the workshop or be certified as instructors.

6. Redesign the post test to make it a more reliable instrument.

7. Make the workshop more interactive, encourage participation by asking them questions, waiting for answers, and asking them to ask questions. Be sure participants complete each exercise in the Participant's Workshop as they will be expecting provider's to do.

~~Handout the Instructor's Manual after the participants have completed the workshop as they will be expected to present it.~~

9. Include instruction on operating the videotape recorder and audiocassette.

10. Include a full demonstration of the games that are designed for the workshop.

11. Stress use of Coursebook activities and training aids by providers with their staff and residents.

Chapter 10

Recommendations for the Instructor's Manual

Introduction

The pilot test version of the Instructor's Manual was 3 hole punched and packaged in a 3 ring binder. Each module was separated with lavender, cover stock, oversized divider pages. The Instructor's Manual was 143 pages, printed on one side only.

The manual consisted of two types of materials:

1. A reduced version of the activities pages from the Participant's Coursebook printed in black ink with instructions for presenting the information in red ink at the top of the page. To the right of the reduced coursebook, also in red ink, were key points and interesting facts to further guide the instructors in presenting the materials.
2. In addition to the activity pages, the instructor's manual also had "pink" pages, instructions for introducing the modules, response sheets to activities in the Coursebook, and additional information on various subjects.

Data Sources

Information used to recommend changes to the Instructor's Manual were gathered from three main sources including: Written notes from BWA observers during the workshops, the transcript of the videotape of the June 26, 1989 Focus Group meeting during which time members discussed problems and solutions , and the follow-up survey of instructors.

Procedures

Based on the analysis of all data, project staff prepared recommendations for specific changes to the Instructor's Manual. A draft of the revised Manual and a list of specific changes made to each page were submitted to members of the Focus Group for a full discussion at the Focus Group meeting on September 8, 1989.

Recommendations

1. Change the Instructor's Manual to match changes to the Participant's Coursebook.
2. Continue publishing the annotated coursebook edition with two-colors.
3. Where they do not presently exist, add specific questions that the instructors are expected to ask participants.
4. Use a different type style for the Instructor's notes to make it stand out more.
5. Improve instructions on using the Coursebook activities and materials with staff and residents.

Chapter 11

Recommendations for the Provider's Workshop

Introduction

The agenda for the Provider's Workshop was developed by BWA and Project Home. Participants were recruited by Project Home. Attendance at the workshop was required for renewal of the provider's certification. The agenda included three short breaks. Participants were expected to break briefly for a snack in the middle of the day and to eat lunch while the workshop continued. Workshop sites were selected by Project Home. No guidelines for selected a site or limiting the class size were given by BWA prior to the workshops.

Data Sources

The primary sources of data for the evaluation of the Provider's Workshop were written notes of observers at the eight field test sites, comments of the Focus Group members during the June 26, 1989 meeting, and the Instructor's Follow-up survey.

Recommendations

1. Reduce the amount of material to be covered during the Workshop, especially the information in Module One, Fire Behavior.
2. Reduce the amount of time required to administer the pre- and post tests.
3. Extend the agenda to allow for a full hour for lunch. — Address in Training Module
4. Make the workshops more interactive, encourage provider participation.
5. Select a site where tables are available for participants to work on during the training.
6. Limit the class size to under 25 members.
7. Provide fire safety posters to display during the training.
8. Add videotapes that demonstrate a fire drill, stop drop and roll, and inspecting a home for fire hazards.

Chapter 12

Recommendations for the Provider's Coursebook

Introduction

The field test version of the Participant's Coursebook consisted of 120 pages, printed front and back, 3 hole punched, and individually shrink-wrapped. Included in those pages were the front and back covers (4 pages), and seven divider pages with a table of contents for each section (14 pages). See Appendix B for the complete Table of Contents. The Coursebook included 42 black and white photographs and 19 graphics, including line art illustrations and charts. The cost of printing 400 copies for the pilot test of the instructor's workshop and field test of the provider's workshop was $3,400. The cost to print each book was $8.50 not including editing, photography, and writing.

Data Sources

Data from all sources were collated for each page of the Participant's Coursebook including the pre- and post test results and course evaluation results for items measuring information on each page, and observer (N=8) recommendations and comments. Also included were written notes by observers during the eight field test workshops and follow-up workshop, information gathered from instructors on the Instructor's Follow-Up Survey, information from the transcripts of the videotape of the Instructor's Workshop and the Follow-up Workshop. Information was also sought by an independent review by an expert in fire safety, board and care fires, and Chapter 21 of the NFPA Life Safety Code.

Procedures

Based on the analysis of all data, project staff prepared recommendations for specific changes to the Participant's Coursebook. In addition to specific changes, it was the consensus of the Focus Group members and project staff, that the number of pages of the Coursebook should be reduced from 120 to 96 in order to reduce the cost of printing. The amount of information to be presented at the Workshop also needed to be reduced either by reducing the information in the Coursebook or by changing the workshop presentation.

A draft of the revised Coursebook and a list of specific changes made to each page were submitted to members of the Focus Group for a full discussion at the Focus Group meeting on September 8, 1989. Final changes to the materials are listed by page in Appendix C. A summary of the changes are presented below in Table 12-1. In addition to specific changes for each module, overall changes to the format and presentation are presented in Table 12-2.

Table 12-1
Summary of Proposed Changes to the Provider's Coursebook by Module

Module	Changes
Introduction	Change to Module 1; Add a page on liability issues, reduce Fire Hazard News (pages 1 and 2) to one page; Add additional resources.
Fire Behavior	Reduce number of pages and limit scope to an understanding of the four components of fire: fuel, heat, oxygen, and chemical process; plus how fires start, smoke and flashover. Reorder pages so the last activity in the module will be viewing and discussing the video *Flashover: Point of No Return*.
Life Safety Standards	Organize materials so that all standards that apply to small homes are on one page; all standards that apply to large homes are together. Develop a matrix with the 3 types of groups on one axis (Prompt, Slow, Impractical) and 6 areas of standards as the other matrix. Add information on the danger of using deadbolts. Remove the Residence Certification Standards Checklist. Move to page before Human Behavior in Fires. Include one checklist for large and one for small facility. Add a page giving suggestions for setting up a designated smoking area after the information on interior finishes and interior furnishings.
Human Factors in Fire Safety	Add a page on AIDS patients; End the module with the audiocassette "Human Factors in Fire Safety." Change the activity page so that participants check off each point as they hear it on the tape. Move Community Resources. Start section on disabilities with summary activity (page 13 in field test edition). Add a photograph or line art to staff and resident activities pages.
Fire Hazards	Add information on heating pads and electric blankets; Add information on wood stoves, as well as how to set up a designated smoking area.
Fire Safety Devices	Change the format of page 1 to devices they should have, devices recommended for large homes, and special devices. Participants will check off the devices they have before starting the Fire Safety Devices Module.
Fire Emergency Planning	Remove floor plan pages; Add a page on planning an alternate route.
Resident and Staff Planning	Reduce from 5 to 4 pages
CEP Information	Include CEP information and order form on last two pages of Coursebook.

Table 12-2
Summary of Overall Changes to the Provider's Coursebook Format

1. Print without section dividers to save on cost of printing.
2. Select a permanent binding rather than loose leaf to provide for easier handling in Workshop. If possible, continue to print on 3 hole punch paper. Use perforation for the job aid pages.
3. Number the pages consecutively throughout the book starting with Module One, The Need for Fire Safety.
4. Add line art and photographs wherever needed to make pages more attractive.
5. Review all information pertaining to the NFPA standards. Change sections titled "What are the NFPA standards...." to "A Good Idea." Include recommendations for maximum safety without regards to whether they are specifically included in NFPA code.

Chapter 13.

Recommendations for the Evaluation Instruments

Introduction

The two primary instruments used to assess participant learning and affect towards the materials were the pre- post test and the course evaluation. The pre- post test were designed to be two equivalent forms consisting of 21 items each of which measured a domain of knowledge.

Procedures

Data from all sources were collated to identify problems related to the pre- post test and to determine the appropriate methods of solving those problems. Based on the analysis of all data, project staff prepared recommendations for specific changes to the post test. A draft of the revised test containing 63 items were submitted to members of the Focus Group review.

Summary of Problems Identified

1. Of the 249 number of individuals who attended the field test workshops, 200 attempted to complete a pretest, and 98 completed the entire test. A large percentage of the population, 49%, either did not attempt the pretest or did not complete it during the time allotted. At most workshops, observers noted that there were people who seemed unable to read the test items. Participants were observed telling the instructors that they had left their glasses home. In some cases, participants arrived late and did not have the same amount of time as others to complete the test.

2. Of the 249 individuals who attended the workshops, 175 attempted to complete a post test, and 157 completed the entire test. Of those who attended 74 did not complete a post test even though they were told that they would not receive a certificate if they did not complete the test. In some cases participants left without either attempting or completing the test citing a lack of time or commitments with clients.

3. It is difficult to develop a reliable testing instrument with open-ended questions even when an answer key has been prepared. Participant responses varied from workshop to workshop depending on the interpretation and emphasis of the instructors.

4. In the follow-up workshop, participants were told that they could use the Coursebook during the post test.

5. The tests were too long and took too much time from the instructional period of the workshop.

6. The gain from pre- to post test was probably affected by the fatigue of the participants at the end of a six hour workshop with only short breaks.

7. The Workshop Evaluation did not have an item which matched each module.

Changes to the Post Test were needed to improve readability, increase the reliability, and to reduce the amount of time required to complete the test.

Proposed Changes to the Post Test

Recommendations

1. Develop a multiple choice test with two equivalent forms which can be used as a pre- or a post test.

2. Administer the test by reading each item out loud and having participants respond by circling the correct response.

3. To add construct validity, include a section that measures the participants' values related to fire safety and to their plans for future action related to fire safety.

4. To add predictive validity, develop a follow-up testing procedure to determine what changes the participants have made in their fire safety routines following the workshop. Compare results to information obtained from the Provider's Survey.

Proposed Changes to the Workshop Evaluation for Providers

Changes to the workshop Evaluation for Providers were needed to improve readability, and to increase the readibility.

Recommendations

1. Develop a new set of evaluation questions, so that items measure the participants feelings towards the instructors, the atmosphere, and the course.

2. Use a Likert-type scale, with the middle response being "No Opinion" instead of "Uncertain."

3. Administer the evaluation by reading each item out loud and having participants respond by circling their response.

Proposed Changes to the Workshop Evaluation for Instructors

Changes to the workshop Evaluation for Providers were needed to improve readability, and to increase the readibility.

Recommendations

1. Develop a new set of evaluation questions, so that items measure the participants feelings towards the instructors, the atmosphere, and each module of the course.

2. Use a Likert-type scale, with the middle response being "No Opinion" instead of "Uncertain."

3. Add additional items about which materials the participants will feel confident teaching in the workshops they will conduct.

Chapter 14

Implications for Phase III

Introduction

Phase I and Phase II of the project to develop a Fire Safety Certification System for Board and Care operators has been funded by Small Business Innovation Research contracts from the Office of Human Development's Administration on Developmental Disabilities. Phase III activities must be self-sustaining in terms of funding.

Phase III Goals

The goals during Phase III are:

1. Revise the Workshops and the materials to include the recommended changes and publish a supply of the materials adequate to meet the needs for approximately one year.

2. To the greatest extent possible, encourage licensing and certifying agencies, associations, large provider organizations, members of fire departments who conduct training, and others to enroll in the workshops to train instructors and to then conduct training for providers on a regular basis.

3. Receive additional grants from organizations that fund fire safety activities such as the Tobacco Institute, manufacturers of fire safety equipment.

4. Recruit members for the Continuing Education Program in sufficient numbers to make that activity self-sufficient–500 members during the first publication cycle.

5. Conduct follow-up research using the population of providers who have completed the workshop to determine how the training affected their attitude and behavior with respect to fire safety. Use a control group of providers who have not experienced the workshop.

6. Analyze workshop results to determine characteristics of instructors that seem to be associated with the higher results.

7. Seek peer review by:
   a. Developing reports and articles based on the Phase I and Phase II experiences and data for publication in professional journals.

   b. Develop papers for presentation at conferences and meetings of professional associations.